41.

The OIL AND GAS JOURNAL

FEBRUARY 6
1941

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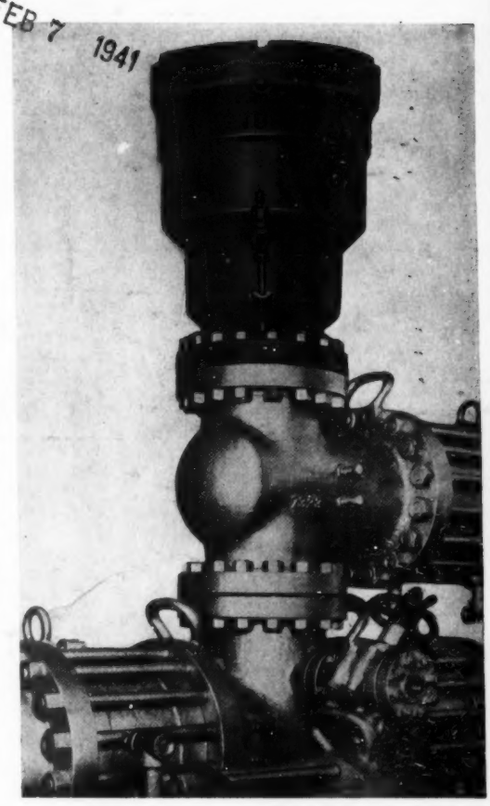
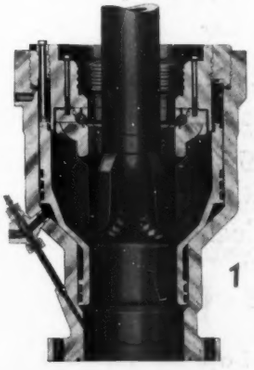
Complete YOUR SAFETY HOOK-UPS

with HYDRIL TYPE "R" BLOWOUT PREVENTERS



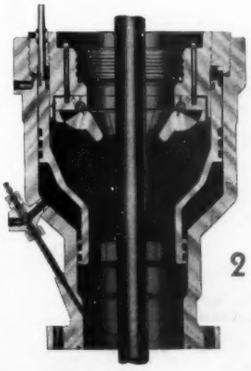
Ask yourself these questions about the equipment you are using: 1 - Will it pack off immediately around any drill string member, regardless of its size and shape? 2 - Can you rotate the kelly, strip tool joints and drill collars, run back to bottom, or pull out of the hole while maintaining the pack-off against high pressure? 3 - Is there enough packing material provided to give you long, economical, safe service while you are working in the well? 4 - Will it allow you to continue drilling under controlled pressure drilling methods without loss of time and change-over of equipment? *The Hydril Type "R" Blowout Preventer will do all these things for you.* Write for full information. Hydril Company, 714 West Olympic Blvd., Los Angeles, California.

1 - Passes bit and any tool that can run in well casing —without removal of any parts.



1

2 - Packing unit seals around any member of drill string. Strips tool joints of all kinds.



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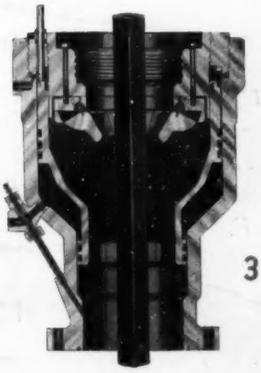
3 - Square and hexagonal kellys can be rotated in the regular packing unit.



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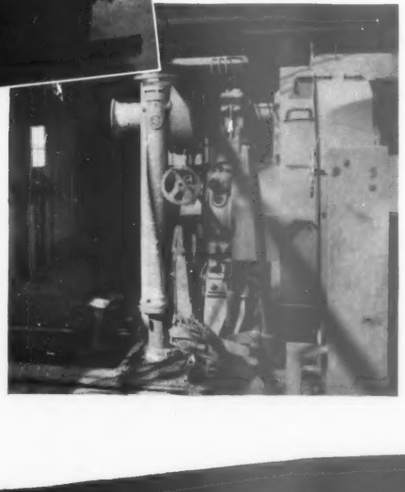
Left: Emsco equipment loaded and ready to be transported to barge drilling site.



Right: One of the many Emsco Drawworks installed on a barge; equipped with Emsco Fluid Level Control for Hydromatic Brake.

Leaders in the manufacture of steel derricks and drilling machinery, Emsco has established and maintained the highest factors of safety, efficiency and dependability in equipment of the most advanced design. These essential factors are precision-engineered features of every Emsco product, resulting from complete first hand knowledge of all drilling and production problems. Wherever there's oil you will find standard Emsco equipment of various types successfully fulfilling all requirements of the toughest, most hazardous service—with a wide margin of safety that permits efficient and economical drilling to any depth, under all operating conditions.

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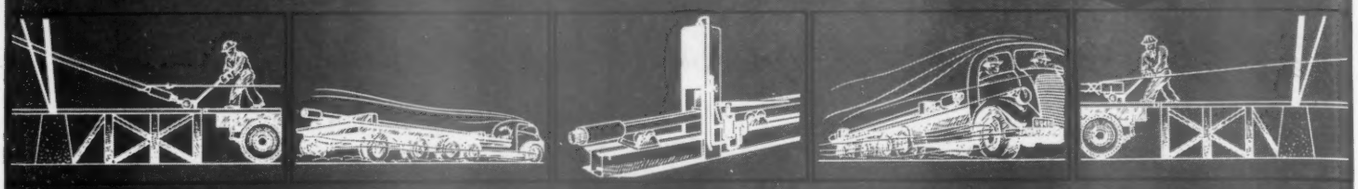
WHICH WAY ARE YOU STRAIGHTENING KELLYS AND DRILL PIPE?

THE OLD, EXPENSIVE WAY, OR



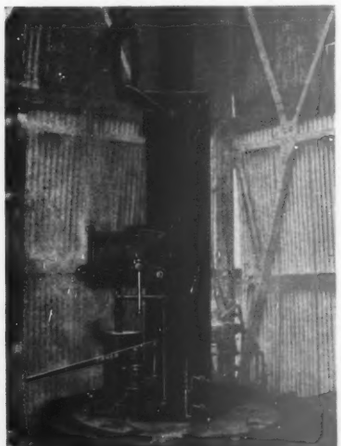
The Modern, Inexpensive Way with a BAKER KELLY STRAIGHTENER

QUICK FACTS Concerning The

BAKER PORTABLE HYDRAULIC KELLY AND PIPE STRAIGHTENER

Kelly Straightener is swung onto the rig floor with catline

Kelly or drill pipe is straightened while suspended in the derrick



- ★ Utilizes principle of the hydraulic ram, applying the force built up by manually operated pump to the bend in the Kelly, drill pipe or drill collar as it hangs suspended in the derrick.
- ★ Straightener is completely portable (weighs only 1200 lbs.) and can easily be transported to the well on a small "pick up" truck or trailer and set up on the rotary table by means of the cat line.
- ★ Easily operated . . . any drilling crew can operate a Baker Kelly Straightener.
- ★ Can be adapted for horizontal pipe straightening operations by attaching a simple device which makes the straightener available for a wide variety of pipe straightening operations around the field and in the shop.

ADVANTAGES OF STRAIGHTENING AT THE WELL

Even though shop facilities may be close at hand, there are a number of important advantages in straightening at the rig . . . advantages that result in substantial savings of time and money. Probably more Kellys are bent during transportation and in being laid down and picked up than from any other cause. When a Baker Kelly Straightener is used, the job is done right on the rotary table with the Kelly hanging in its normal position. The hazards involved in transportation and handling are entirely eliminated, as are also the cost of transporting the Kelly to and from the well, plus the time and expense entailed in removing and replacing it. In foreign or isolated fields, however, the Baker Kelly Straightener is considered indispensable, as the cost and loss of time involved in transporting a bent Kelly or drill pipe to and from a distant shop makes it a serious matter.

For Complete Details see the Baker Section of your Composite Catalog; or get in touch with the Nearest Baker Office or Field Representative.

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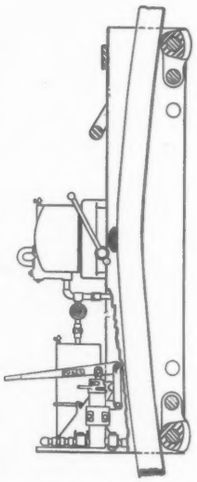
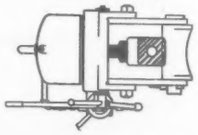
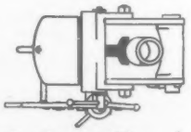


Detailed view showing how ram contacts bend in Kelly or drill pipe



Showing position of Kelly in Straightener during operation



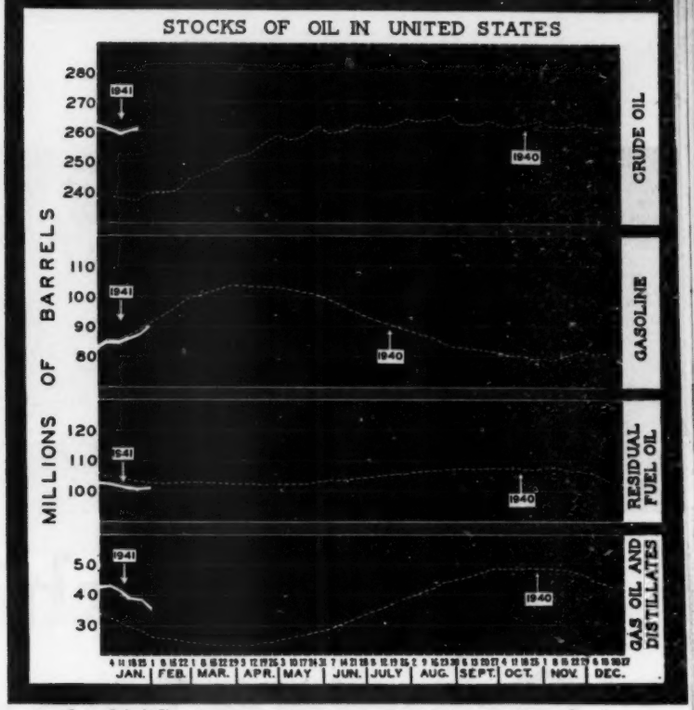
Showing position of drill pipe in Straightener during operation

SAVE TIME, MONEY AND UNNECESSARY HANDLING BY STRAIGHTENING KELLYS AND DRILL PIPE WITH THE

BAKER PORTABLE HYDRAULIC KELLY AND PIPE STRAIGHTENER

Trends

Factors Favorable As Critical Market Period Approaches



THE petroleum industry will shortly be in the midst of what many observers contend is the critical period of the year in markets. They can point to previous years in which market weakness developed in late February extending through March and April and from which the industry did not fully recover over the remainder of the year. Several years can be cited in which the gasoline market strengthened during the fall and early-winter months and then started downward just as the season of greatest gasoline consumption got under way.

CRUDE PRODUCTION *3,594,760 bbl. daily average—up 4,420 bbl. One year ago 3,511,953 bbl.*

CRUDE STOCKS *260,093,000 bbl. as of January 25—up 159,000 bbl. One year ago 237,339,000 bbl.*

GASOLINE STOCKS *90,864,000 bbl. as of February 1—up 2,101,000 bbl. One year ago 91,272,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *100,428,000 bbl. as of February 1—up 131,000 bbl. One year ago 102,685,000 bbl.*

GAS OIL AND DISTILLATES *37,634,000 bbl. as of February 1—down 1,405,000 bbl. One year ago 26,397,000 bbl.*

REFINERY RUNS *3,680,000 bbl. daily week ended February 1—up 55,000 bbl. One year ago 3,395,000 bbl.*

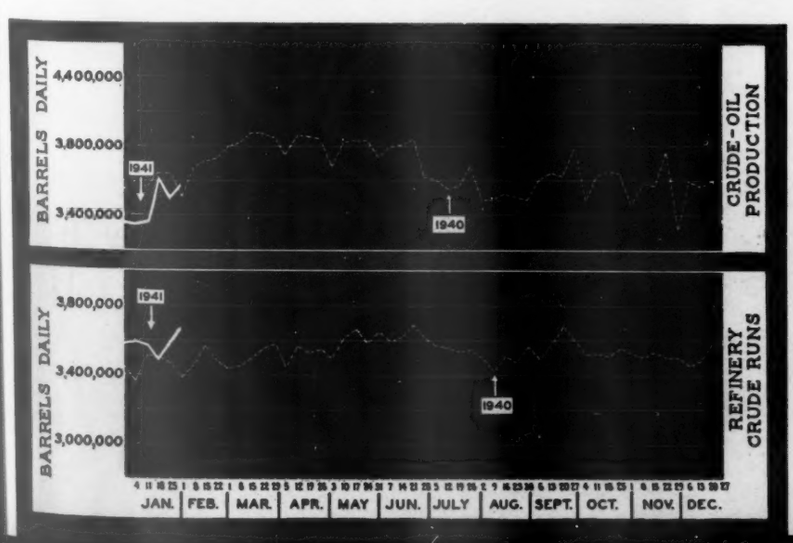
The explanation of this development usually has been that refiners and producers became "too enthusiastic" regarding the year that was coming up and overproduced both raw material and refinery products. There have, of course, been other contributing causes such as the changes in demand which last year brought a sharp decline in exports and an unexpectedly large gain in the consumption of distillates and gas oils. Last year and in 1939, excessive accumulations of gasoline stocks brought price declines starting in February. In those years the downward trend in refinery gasoline prices was abetted by a weak natural-gasoline market applying to all plants east of California. Last year by late March in the Mid-Continent, prices on natural gasoline had dropped to the lowest point in several years with the representative grades bringing less than crude.

While there have been no evidences of general strength in the gasoline market in recent weeks, most observers feel that the statistical situation as determined by operating trends is stronger this year than it was in 1940 or 1939. While there may be some recessions from present price levels in the case of both refinery gasolines and natural gasolines over the next 30 to 60 days, they do not believe these declines will be drastic and should be temporary if the recent balances between supply and demand are continued. They stress the fact that the state conservation bodies should not approve some of the requests for increases made for February and March allowables.

There were no outstanding market developments over the past week. With domestic gasoline consumption at the low seasonal point of the year, the movement from refineries to bulk terminals has been slow and small price reductions have been reported in several refining centers. Furnace oil and other grades of distillate and gas oil are freely offered. Residual oils at interior points and several grades of lubricants are the strongest products of the refinery list. Strength in crude oils centers in Illinois and the Mid-Continent. Reports of the past week indicate that due to decline in Illinois production there will be an enlarged movement of Texas crude north by pipe line this year.

DAILY AVERAGE PRODUCTION FOR WEEK

	Feb. 1, 1941	Bur. Mines Feb. est. of demand	February state allowables	Jan. 25, 1941
Arkansas	70,645	66,100	69,969	70,005
California	603,725	595,700	571,000	605,250
Eastern fields	110,300	121,800	.....	111,800
Illinois	323,390	342,100	.....	324,425
Kansas	198,000	193,200	197,000	199,400
Louisiana	290,475	288,600	294,942	289,490
North Louisiana	*67,975*	.....	.....	*69,790*
Louisiana Gulf Coast	*222,500*	.....	.....	*219,700*
Michigan	39,950	47,500	.....	40,200
Mississippi	18,995	16,100	.....	16,965
Nebraska	2,550	3,200	.....	2,625
New Mexico	102,950	100,700	106,000	102,990
Oklahoma	400,500	442,500	400,000	392,000
Rocky Mountain states	96,080	98,500	.....	97,200
Texas	1,337,200	1,312,900	1,318,873	1,337,900
East Texas	*375,725*	.....	.....	*376,925*
West Texas	*228,675*	.....	.....	*228,175*
North Central Texas	*130,700*	.....	.....	*130,400*
East Central Texas	*82,100*	.....	.....	*83,075*
Texas Panhandle	*74,525*	.....	.....	*72,475*
Texas Gulf Coast	*356,625*	.....	.....	*355,200*
Southwest Texas	*88,850*	.....	.....	*91,650*
Total United States	3,594,760	3,628,900	.....	3,590,340
Total, January 1-February 1, 1941		112,018,940 bbl.		
Same period last year		115,819,391 bbl.		



Left: Carter Oil Co.'s new research center at Tulsa. The building is T-shaped, with the exterior of buff brick. Production, geophysical, and instrument shop each occupy a wing

Below: P. S. Williams, supervisor of geophysical research; Marvin S. Morrow, supervisor of the shop; and L. R. Hodell, supervisor of production research

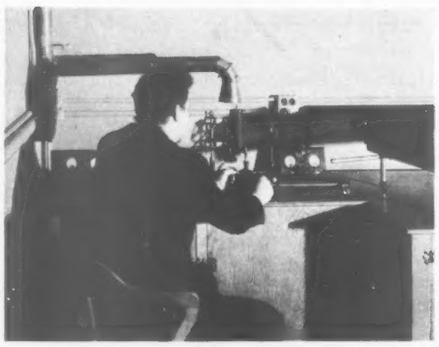
New Lab Exhibits the Growing Importance Of Applied Research

By HARRY F. SIMONS

AN indication of the growing interest of oil companies in geophysical and production research is the establishment of the Carter Oil Co. Research Center which was opened at Tulsa on Tuesday, February 4. The new building cost approximately $125,000 exclusive of equipment and is located on North Lewis Avenue, replacing older quarters at the same location which were quite limited.

In the new quarters, many types of work will be carried out, not only for Carter Oil Co., but for the Standard Oil Co. of New Jersey and its subsidiary and affiliated companies. The three branches are production research, geophysical research and instrument and tool manufacturing. In charge of the production research is L. R. Hodell. Dr. P. S. Williams heads the geophysical-research department and Marvin S. Morrow has charge of the instrument shop.

Much of the work at the new research center will be directed toward improving the methods used in the finding, production and transportation of oil and the development of new methods and equipment. The work will also include the manufacture of all the geophysical apparatus required by the Standard Oil Co. organization and specialized production equipment which is not available on the open market. Facilities at the research center will afford an opportunity for training men for geophysical work.



Above: J. J. Heigl, at the spectrograph for determination of metals in structural materials and cores from wells. Left, below: Drafting room, with boards for four men. Right, below: Production department's mechanical laboratory. In picture is Ben O. Sewell

An example of the type of work to be carried on by the production-research department is afforded by the Carter pressure core barrel, a tool which is already in use. A similar barrel which can be run on a wire line (retractable type) is now being developed. This equipment offers a new approach to the study of fluids under reservoir conditions and before it can be fully utilized a new technique and possibly additional equipment will need to be created.

Each advance in production engineering and practices necessitates the construction of some new instruments not commonly found on the market. The Carter Oil Co. has run approximately 1,500,000 ft. of welded casing and has developed several new instruments which speed up this work. One of these is a special magnetic permeability meter which flashes a light when a circumferential weld on the casing reaches a temperature at which it can be safely quenched.

In general, the efforts of the production-re-

Right, above: Shop for manufacture of geophysical instruments and for construction of research equipment contains regular machine-shop equipment plus precision machines. Right, below: Combination office and laboratory where principal research is on electrical circuit design of seismograph instruments. In picture is Cleve C. Nash

search group will be directed toward more efficient production practices through the studies of the dynamics of reservoirs, studies of the means of increasing ultimate production and the invention and development of new tools for use in the production of oil.

The demand for refinements, dependability and speed of operation of geophysical equipment is accompanied by a desire to extend the scope of usefulness of the instruments and to find new functions for geophysics generally. There is also the never-ending search for new and better methods. A study of the fundamentals on which each method of prospecting is based will be made. The main objective is to reduce the overall cost of finding oil by discovering how to obtain more and better information at reasonable cost. Seismic and gravitational methods have been receiving considerable attention.

The equipment used in reflection seismograph work has been improved greatly during the past few years and a greater understanding of the fundamentals obtained. This type work requires considerable field experimentation and experimental equipment. An experimental seismograph-recording truck is kept in the geophysical-research department. This truck is equipped as a traveling laboratory but is arranged so that it can be used for routine prospecting work. It has been used to test new equipment and methods in the field.

One development which has already resulted from this program is the reduction in weight of the gravity meter. It is now possible for one man to carry the complete instrument whereas the early types of this instrument required several men to operate. The result is a much faster prospecting survey with this method.

The shop located at the research center has all of the machinery and facilities needed to manufacture experimental instruments and machines which will be needed by the research men. It will also be used to construct equipment for reflection seismograph exploration, gravity meters, equipment needed in special production activities and apparatus used in research work, much of which has to be specially designed and constructed.

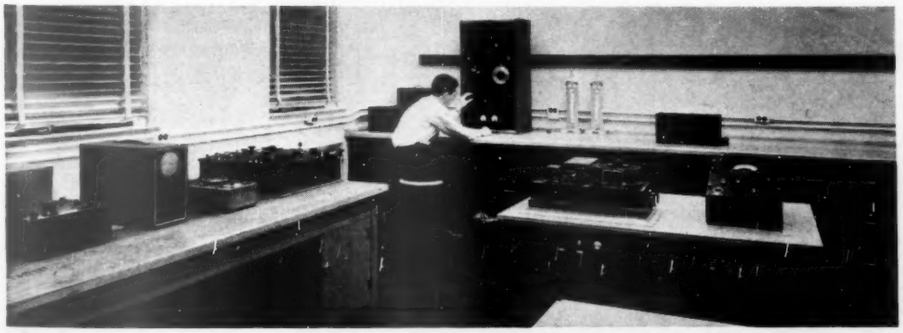
The staff includes the directors of the departments, 14 lead research men to whom problems can be assigned and a group of about 35 technicians and stenographers. Five of the lead research men are in the production division and nine are in the geophysical division. Each of these men is capable of taking a problem and investigating its possibilities with the equipment provided within the building.

The building is a T-shaped, one-story structure built from fire-resistant material with brick and tile walls and concrete slab floor. The roof trusses, made of steel, reach entirely across the building so that pillars are eliminated and a rearrangement of the interior can be easily made at any time. Partitions in the building are made of tile or steel and plaster and the ceiling is made of the latter two materials. With the exception of the shop, the floors are covered with asphalt tile. The building is specially insulated against sound and the shop wing is structurally isolated from the other two wings to prevent vibrations and noises from disturbing the personnel.

A heating and air-conditioning system provides complete control of temperature and humidity in both summer and winter. The glass windows are provided with venetian blinds and the entire lighting system in all wings is of the fluorescent type.

The building faces west with the geophysical laboratories in the south wing, the production laboratories in the north wing and the shop in the east wing. An entrance lobby and reference library are located in the center of the building between the two sets of laboratories. The library

(Continued on Page 26)



Left, above: Corner in physical-measurement laboratory. Left, below: General-purpose geophysical laboratory and truck room has space for experimental truck and light shop equipment for research men. In the picture is Robert S. Dahlberg, Jr.

SPARKS . . . FROM THE NEWS

TWOFOLD PROTECTION: The Nazis have encountered many problems in taking over Rumanian oil properties—one of which involves their protection from sabotage from within and military attack from the outside.

GAS RECORD: Oklahoma is claiming the largest gas well in history, estimated at latest reports at 438,000,000 cu. ft. It was brought in last November in the 18-year-old Chickasha gas field and for weeks has defied attempts at an accurate gage of volume.

BOUNDARY LINE: War economics is putting a strain on producers in the Turner Valley, Canada, field to bring sufficient crude supplies out of the ground, while across the border in Cut Bank, Montana, the chief problem continues to be one of finding an adequate market.

MAJOR CONSOLIDATIONS: The scores of small pools in Central Kansas are being joined almost as fast as new wells are completed, and a good hunch is that soon a large part of them will be listed in four or five major fields.

QUESTION: Refiners have in prospect a 6 per cent increase in gasoline consumption this year. What good will it do them if they insist on supplying this enlarged market at prices 10 or more per cent under those of last year?

THE REASON: A large Mid-Continent company this week opened a geophysical and production research center. These centers are the basic explanation of why new reserves are keeping abreast of demand.

FEELING THE PINCH: Many oil companies are having the defense program brought closer home as key men who are reserve officers are called for active duty.

CONSERVATION EXHIBIT: The production of the Salem, Ill., field is less than half what it was a year ago while Louden's output in the same state is greater than it was early last year.

SIGNIFICANT: Negotiations for pipe-line shipments of crude oil from pools in the Houston, Tex., area to refineries in Illinois and Indiana indicate a significant trend in crude-oil markets.

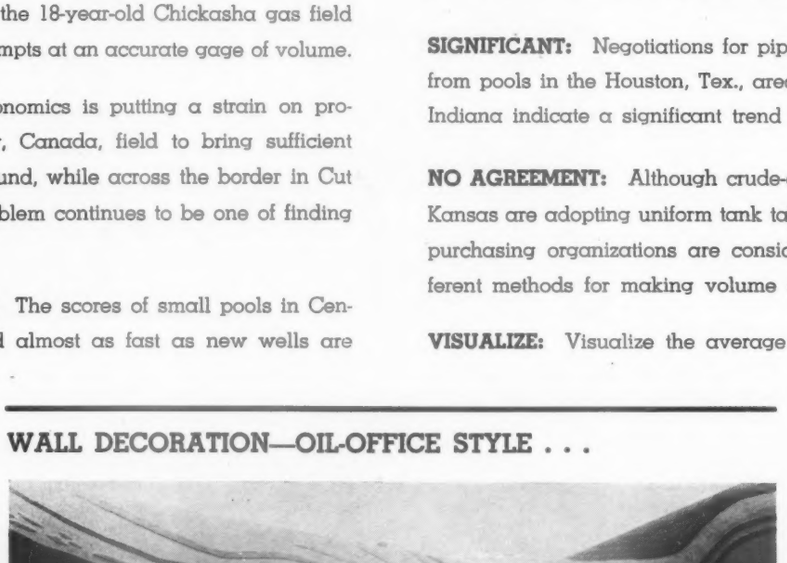
NO AGREEMENT: Although crude-oil buyers in Oklahoma and Kansas are adopting uniform tank tables on a 100 per cent basis, purchasing organizations are considering adoption of three different methods for making volume corrections for temperatures.

VISUALIZE: Visualize the average citizen of the United States waiting 4 minutes while the wood-fired generator on his car developed enough gas to start the car and keep it going. That's what hundreds in Continental Europe are doing because they don't have gasoline.

OMINOUS CALM: There has been a lull in Washington developments affecting the oil industry since the first of the year. Many insist it is the calm before the storm.

OFFSET: The Wilcox trend play in the Texas Gulf Coast area—now 2 years old—is increasing in importance and apparently will open a large area for deep-sand development.

WALL DECORATION—OIL-OFFICE STYLE . . .



A new building devoted to production and geophysical research was opened this week by a major oil company. The decorations on the walls of the reception lobby carry out the geological motif, one wall showing the subsurface structure of the Tonkawa field, another the Oklahoma City field, another the Cushing field, and the fourth the Burbank field. That shown here is the Tonkawa. Seen through the open door is the library and reception room. (See complete description of the building on Pages 10-11)

Volume-Correction Policies Of Oil Buyers Unsettled

By H. STANLEY NORMAN

BEYOND the uniform basing point of computing volume of Oklahoma and Kansas crude-oil purchases on 100 per cent tank tables, there is minor but significant disagreement in the crude-buying policies that became effective last Saturday morning. Adoption of 100 per cent tank tables in preference to 97 per cent that had prevailed for years opens a new era in the relationship between Mid-Continent crude-oil producers and purchasers. At this early stage of applying the new policy, purchasing companies appear to gravitate into three general classifications as far as the mechanics of correcting volume for temperature are concerned.

Purchasers and producers are agreed that clarification is needed on the point of volume corrections for temperature which is the phase of the new buying policy in the Mid-Continent where disparity is most pronounced. Contention is made that voluntary institution of 100 per cent tank tables offers all branches of the industry an opportunity to bring conflicts of the past into harmony. Argument is advanced by both producers and purchasers that most of the disputes of the past between buyers and sellers can be avoided in the future if complete uniformity is attained in the matter of computing volume.

Stripped of contingencies, the new purchase policy in Oklahoma, Kansas, and in parts of Arkansas and Illinois awards producers an increase of 2 to 2.5 per cent in the revenue from crude-oil sales. Isolated and subnormal conditions will reduce the increase to little more than received under the old 97 per cent tank tables but purchasers agree that these will be exceptions to the general rule.

The posted price for Mid-Continent crude remains unchanged at a range of 60 cents to $1.10, depending on the individual purchaser and gravity of oil. Consequently, the only advance is that accruing from liberalization of the volume computation.

Three Policy Groups

Variations in purchase policy are confined to three general classifications. One group intends to make volume corrections for temperature on the basis of .0004 coefficient of expansion and contraction which would correspond to the Texas regulation established by the Railroad Commission. Another group will follow details of the supplement to the Bureau of Standards' bulletin C-410 which provides a coefficient of .0004 for oil of 15° to 34.9° A.P.I. gravity and .0005 for oil ranging from 35° to 50.9° A.P.I. gravity. Still a third group has deferred decision on the point of correcting volume for temperature, probably to see which becomes the more prevalent.

The average temperature of Oklahoma oil is approximately 75° F., while that in western Kansas is about 67° F. The accompanying table shows the factors for reducing volume at temperature shown to equivalent volume at 60° F. From the tabular data it is indicated that the average temperature-volume correction on Oklahoma oil will be .0060 to .0075, depending on gravity, and upon which coefficient is used. Thus, there will be an average deduction from the theoretical 100 per cent tank-table volume of 0.6 to 0.75 of a per cent for the temperature factor alone.

Both groups which have made definite commitment on the temperature-correction factor cite points in support of their positions. Companies adopting the .0004 factor point out that it is required by rule in Texas and that extension to Oklahoma and Kansas will involve a minimum of confusion in bookkeeping and that personnel is available for supervision of the mechanical transition.

In support of adopting the National Bureau of Standards' conversion tables some of the purchasing-company personnel contend that use of factors approved by a government office will more definitely eliminate the possibility of disputes.

Analysis indicates that there is slight deviation from the so-called Group 1 and Group 2 tables, excepting at extreme temperatures. Consequently, some of the companies, whose temperature-correction polilies are to be announced later, contend that uniformity is the major question.

Full deductions for basic sediment and water are to be made by all purchasing companies adopting 100 per cent tank tables. Under the greater protection against contamination contained in the 97 per cent tank-table buying up to 1 per cent with not more than ½ per cent free water was tolerated by the purchasers. Elimination of the contamination tolerance will go far, purchasers contend, in removing a source of dispute between buyers and sellers. In practice, the tolerance of contamination often has been used as a potent competitive argument. Purchaser representatives soliciting connections have used the contamination-tolerance argument effectively in "raiding" a competitor's connections. Furthermore, the gagers of companies short of crude have accepted oil that did not qualify under strict interpretation of the contamination specifications.

Purchasers do not contend that revision of the basis for crude payments will eliminate the human element but uniformity of policies will, they claim, reduce this competitive consideration to a minimum.

Table Shows Factors to Reduce Volume at Temperature Shown to Equivalent Volume at 60° F.

Temp. °F.	Group 1 .0004 gravity 15°-34.9° A.P.I. at 60° F.	Group 2 .0005 gravity 35°-50.9° A.P.I at 60 °F.
100	.9841	.9802
99	.9845	.9807
98	.9849	.9812
97	.9853	.9816
96	.9857	.9821
95	.9861	.9826
94	.9865	.9831
93	.9869	.9836
92	.9873	.9841
91	.9877	.9846
90	.9881	.9851
89	.9885	.9856
88	.9889	.9861
87	.9893	.9866
86	.9897	.9871
85	.9901	.9876
84	.9905	.9881
83	.9909	.9886
82	.9913	.9891
81	.9917	.9896
80	.9921	.9901
79	.9925	.9906
78	.9929	.9911
77	.9932	.9915
76	.9936	.9920
75	.9940	.9925
74	.9944	.9930
73	.9948	.9935
72	.9952	.9941
71	.9956	.9946
70	.9960	.9951
69	.9964	.9956
68	.9968	.9961
67	.9972	.9965
66	.9976	.9970
65	.9980	.9975
64	.9984	.9980
63	.9988	.9985
62	.9992	.9990
61	.9996	.9995
60	1.0000	1.0000
59	1.0004	1.0005
58	1.0008	1.0010
57	1.0012	1.0015
56	1.0016	1.0020
55	1.0020	1.0025
54	1.0024	1.0030
53	1.0028	1.0035
52	1.0032	1.0039
51	1.0036	1.0044
50	1.0040	1.0049
49	1.0044	1.0054
48	1.0048	1.0059
47	1.0052	1.0064
46	1.0056	1.0069
45	1.0060	1.0074
44	1.0064	1.0079
43	1.0068	1.0084
42	1.0072	1.0089
41	1.0076	1.0094
40	1.0080	1.0099
39	1.0084	1.0104
38	1.0088	1.0109
37	1.0092	1.0114
36	1.0096	1.0119
35	1.0100	1.0124
34	1.0104	1.0129
33	1.0108	1.0134
32	1.0112	1.0139
31	1.0116	1.0144
30	1.0120	1.0149
29	1.0124	1.0154
28	1.0128	1.0159
27	1.0132	1.0164
26	1.0136	1.0169
25	1.0140	1.0174
24	1.0144	1.0179
23	1.0148	1.0184
22	1.0153	1.0188
21	1.0157	1.0193
20	1.0161	1.0198
19	1.0165	1.0203
18	1.0169	1.0208
17	1.0173	1.0213
16	1.0177	1.0218
15	1.0181	1.0223
14	1.0185	1.0228
13	1.0189	1.0233
12	1.0194	1.0238
11	1.0198	1.0243
10	1.0202	1.0248

Data compilation courtesy Marchant.

Five States on List

The five large producing states in the Southwest are now on 100 per cent tank tables in the relation between producers and purchasers. Buyers in Texas accepted the 100 per cent tables in 1938. Humble Oil & Refining Co. inaugurated 100 per cent tables in New Mexico October 1, 1940, and all other purchasers in that state joined the movement January 1, 1941. Phillips Petroleum Co. applied 100 per cent tables to Arkansas February 1, simultaneously with the change in Oklahoma and Kansas, making the policy uniform in that state. The most prevalent correction factor for temperature in Arkansas is .0005. However, Standard Oil Co. of Louisiana, Columbia Pipe Line Co. and Atlantic Refining Co. use .0004. Carter Oil Co. applied 100 per cent tables to the Louden field, Illinois, when the change was made in Oklahoma and Kansas. Louisiana and Wyoming, generally, are on 99 per cent tables while 98 per cent prevails in Montana and Colorado and the Lance Creek, Wyoming, field.

Purchasing companies which have definitely announced application of .0004 temperature-correction factor to Oklahoma and Kansas crudes include the Texas Co., Tide Water Associated Oil Co., Phillips Petroleum Co. and Continental Oil Co.

Companies that will follow the Bureau of Stand-

(Continued on Page 26)

The Germans have developed special power tankers for use in shallow waters and canals. The propulsion unit is designed to prevent erosion of earthen canal banks. Closeup of unit is seen in picture on next page

Vulnerability of Rumanian Oil Lessens Its Value to Nazis

Germany has an acute need for Rumania's oil, but because the latter's oil fields are vulnerable to British air attack, the German advance into the eastern Balkan area is at least temporarily halted. This may also explain Hitler's hesitancy in coming to the aid of his Italian ally.

By J. P. O'DONNELL

NEW YORK, Feb. 4.—No changes appear imminent in the oil position of Europe's warring countries though 1941 may witness radical revisions before it runs its course. Germany apparently has an adequate supply consisting in the main of domestic synthetic production and imports, principally from Rumania, and Great Britain has vast supplies at her command, dependent only on her ability to import them. What changes do take place will be influenced entirely by the course of active warfare such as intensification of the German submarine and aerial blockade that may disrupt England's imports or war in the eastern Balkan area which would include Rumania.

Germany's acute need for Rumania's oil supplies is believed to be the principal deterrent to active warfare in the eastern Balkan area which is regarded by a number of military observers as the next likely battle ground of the war. Rumania's oil-refining and transportation facilities are extremely vulnerable to air attack and this factor has undoubtedly made Nazi moves in the Balkans more cautious than would be otherwise necessary.

British air assaults on Rumania are expected particularly if the long-planned German drive to the east is resumed with a strike through Bulgaria or if Germany goes to the aid of beleaguered Italy in Albania. Because of the vital role in nazified Europe's economy which Rumanian oil must play, it is obvious that Great Britain would need little provocation to strike at the heart of the Reich's principal mineral-oil supply. This would be a comparatively simple matter from bases in northern Greece.

Air attacks on Rumanian fields themselves would probably prove of minor consequence since there are more than 2,000 wells scattered through 30-odd fields. Raids elsewhere, however, could have a destructive effect. Two-thirds of Rumania's refining capacity is concentrated about Ploesti and this concentration would constitute a localized target in contrast to the widespread synthetic plants in Germany. Aggregate capacity of the 13 refineries in the Ploesti area is 150,000 bbl. per day out of Rumania's total of 225,000 bbl. Other major plants are a 35,000-bbl. refinery at Campina and a 20,000-bbl. refinery at Teleajen, both of which are among the country's most modern.

Possibly even more vulnerable to air attack would be the transportation facilities. Rumania has four major pipe lines: A 10-in. line from Campina to Constantza with a capacity of 2,600 tons per day, and three 5-in. lines, one from Baicoi to Guirgui and another from Ploesti to Guirgui, both of which have a capacity of 500 tons per day, while a third runs from Baicoi to Bucharest and has a capacity of 700 tons per day. Since these pipe lines represent an important part of Rumania's oil-transportation system, disabling them would certainly sharply curtail shipments to Germany. The principal line, that to Constantza, has been rendered almost valueless since it carried oil to the Black Sea port for export to western Europe, a route now blocked by Britain's Mediterranean blockade. German engineers are reported to be building two additional pipe lines, one to the Danube port of Guirgui and the other due west to Moldova, also on the Danube. The latter line would be laid through mountainous country and its construction would be expensive and time consuming.

Much of Rumania's internal oil transportation is accomplished by railroads which have enjoyed better cooperation from the government than the pipe lines, despite the fact that transportation costs by pipe line were but one quarter of the railroad costs. Attempts of the oil industry to increase pipeline facilities were denied by the government which did not care to deprive the railroads of the revenue. Little oil was exported by the railroads in normal times, however, the total being usually less than 5 per cent. The principal destinations of rail

shipments were the ports of Constantza and Guirgui.

The main railroad line serving Rumania's oil center runs north from Ploesti to the Buzau and Bacau districts to Cernauti and crosses into that section of Poland annexed by Russia. The southern terminus of this line is Guirgui. It skirts the eastern edge of the Carpathian Mountains. A second line runs west from Bucharest to intercept the Oriental Express line between Belgrade and Budapest and a third runs northwest from Ploesti to Brashov from which several branches serve Hungary. The latter lines traverse the southern Carpathians and at some mountain points only a single line can be employed. While these are more direct than the other they are also more vulnerable and more difficult to defend. German engineers have tried to meet this problem by double-tracking as much of the line as possible.

Transportation Routes

Most important route in the transportation of Rumanian oil since the closing of the Mediterranean shipping lanes and the loss of Constantza is the Danube River and the oil port of Guirgui, only 160 miles from northern Greece, where air bases would be available to the Royal Air Force if hostilities began in the Balkans. Both a pipe-line and a railroad terminal, Guirgui is the most important single bottleneck of the Rumanian oil industry and for that reason would undoubtedly be the first objective of a hostile air raid. Normally one-third of Rumanian exports move by the Danube, seven times as much as was exported by rail. The loss of Constantza has increased the importance of the river route tremendously. While oil is shipped from other Danube ports, none has the direct pipe-line and rail connection with the oil fields and refining centers that supply Guirgui.

The Danube provides an excellent distribution system but is also regarded as vulnerable. It is navigable by large vessels to Braila and by flat-bottomed barges to Ulm in western Germany. The Germans have developed special power tankers for use in shallow waters and canals, one of which is illustrated in the accompanying photograph. This particular vessel, the Rhenus out of Mannheim, is the first foregear ship in the world. To avoid erosion of earthen canal banks by the wash of passing vessels, a German shipbuilder conceived the idea of a ship with the propulsion unit encased in a hollow bulbous nose. Naval architects were amazed when her trial runs proved that at a speed of about 9 knots, not even the smallest waves were created as the upper picture shows. The minimized wash at higher speeds will permit more rapid movement through canal systems. The Danube is connected with the Rhine by the Ludwigskanal and the Main River. In addition it has a multitude of tributaries, 35 to 50 of which are navigable depending upon the season.

The most vulnerable point along the river is the Iron Gate, a 2-mile gorge in the Carpathian Mountains below Orsova in Rumania, 210 miles north of Greece and therefore within easy flying and bombing distance. The river is narrow at this point, approximately 1,400 yards, very shallow and the current is rapid. A lateral canal or channel facilitates passage. In addition one of the few westbound railroads takes the Iron Gate route to Hungary.

Germany's need for Rumanian oil is evident from the preparations she has made to insure its delivery, double-tracking railroads, expanding pipe lines and increasing the Danubian fleet by the development and construction of light-draft tankers. Before the war the Danube fleet of tankers consisted of 300 vessels having an aggregate capacity of 225,000 tons. Because of the vital character of Rumanian oil and the vulnerability of the transportation system some observers are of the opinion that Germany will not jeopardize this supply by pursuing action in the Balkans. This view is supported by the report that 80,000 German troops were withdrawn from Rumania last week following a mutually agreeable definition of German and Russian spheres of influence in the Balkans.

Another deterrent to further action in southeastern Europe is the success of the British Empire's African armies. The destruction of from 40 to 50 per cent of the Italian North African army has removed the threat of a pincer movement against the near eastern fields by Italian armies moving eastward from Libya through Egypt and German forces south through Bulgaria. If need be, the British could now withdraw much of the African army to support Turkey in the defense of the Asia Minor bottleneck through which an invading army from Europe would necessarily pass to reach the Iraq, Iran and Persian Gulf fields. Thus the threat to these fields which appeared imminent when Germany moved armed forces to the Bulgarian border is at least temporarily alleviated.

The remaining front on which an oil prize is at stake is in Albania where Italy seems likely to lose the Devoli basin fields north of Berat. Since this oil is transported to the Adriatic coast for shipment to Italy via a pipe line to the port of Valona, actual seizure of the fields is not necessary to cut off this supply. The docks at Valona have been bombed and shelled so it is doubtful if Italy is still getting oil though the fields themselves are still behind the Italian front lines.

Italy's Need Greater Than Hitler's

Italy's need for oil is known to be much greater than that of Germany. Virtually all of her refineries are believed to be shut down for lack of crude which is regarded as the reason for the few air attacks that have been directed against them. Recently the R.A.F. raided the 5,000-bbl. refinery of the Distillazione Italiana Combustibili and apparently inflicted substantial damage. Two large buildings were said to have been destroyed and storage tanks fired. Because of its location in northeastern Italy this refinery is within reach of crude-oil supplies from other countries. At the same time the R.A.F. reported bombing the German Danube port of Regensburg where two small refineries are located. Regensburg is regarded as of more importance as a point of discharge for tankers bound from Rumania than as a refining center.

The vulnerability of Great Britain's oil supply is measured by her ability to import, and so far indications are that tankers have been able to elude the German submarine blockade with a good degree of success. Known war tanker losses for all nations up to January 1 totaled 68 vessels with an aggregate deadweight tonnage of 774,401 tons. This total includes five German tankers averaging 10,000 tons and three French vessels averaging 15,000 tons. The known loss to the Allied fleet therefore is less than 700,000 tons, a small fraction of the total available to Great Britain.

A summary of tanker losses follows. This table includes only those losses which have been definitely established and therefore is undoubtedly somewhat conservative.

Registry—	Number of vessels	Tonnage (deadweight)
Great Britain	35	401,743
Norway	12	131,151
France	3	43,690
Germany	5	53,955
Netherlands	4	32,245
Sweden	3	38,800
Denmark	1	16,400
Panama	5	56,417
Italy*	(*)	(*)
Total	68	774,401

*Late reports indicate that the Italian vessel previously reported lost has been salvaged.

Outline Changes in Determining Turner Valley Crude Quotas

Changes in the present method of determining Turner Valley crude quotas, to become effective this month, have been outlined by Robert E. Allen, chairman of the Petroleum and Natural Gas Conservation Board. The changes include an initial minimum allotment based upon production depth, to provide a "minimum living wage" for each well; elimination of acreage as a factor in fixing quotas, except in a corrective sense; modification of the choke test by such uniform component as may more nearly relate it to normal productivity of the wells; retention of the current measurements of reservoir pressure until better ones can be obtained; equal weight in the fixing of quotas to the three remaining factors of gas-oil ratio, reservoir pressure and modified flow test; and limitation of sharing position by gas allowance and maximum efficient production as at present.

Propeller is encased in hollow bulbous nose. At a speed of 9 knots, not even the smallest waves were created, as seen in the other picture. The minimized wash permits rapid movement through shallow waters

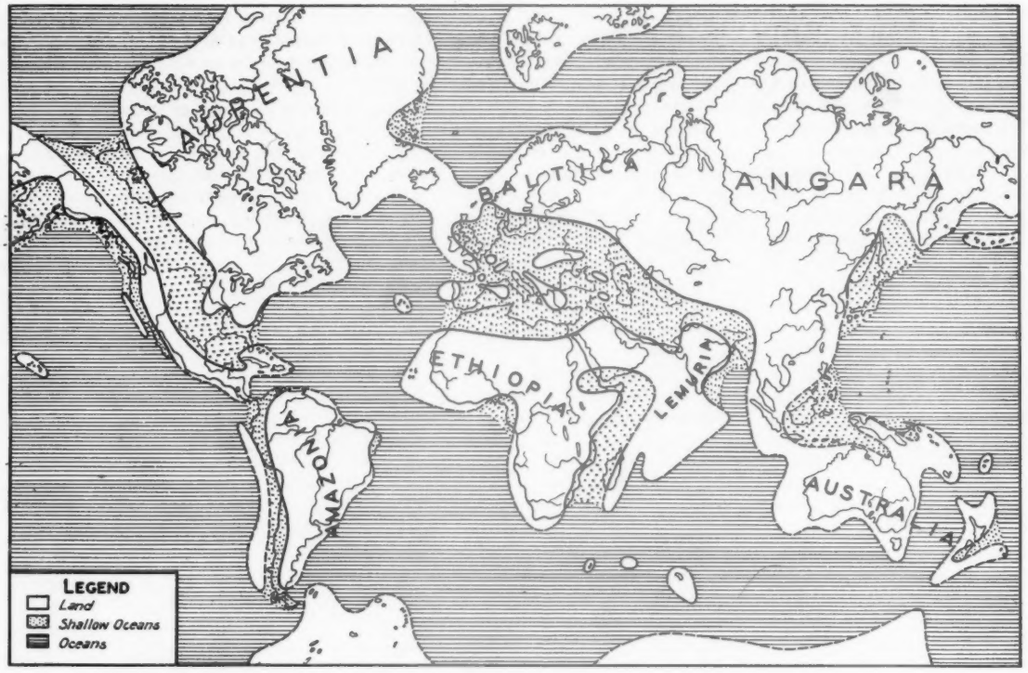


Fig. 1—The world during the early Upper Cretaceous (after Schuchert)

During the Mesozoic both hemispheres were invaded by the sea. The Alpine chains separated the two hemispheres while the Andine chains are common to both hemispheres and surround the Pacific Ocean. The effect of these events on the occurrence of oil is discussed in this article.

By W. V. HOWARD

Northern Hemisphere Offers Greater Oil Possibilities

PART 2

IN the first part of this article, it was shown that the Northern Hemisphere differed from the Southern Hemisphere during the Paleozoic mainly in the fact that the southern continent was above sea level for much longer periods and also was covered by a thick mantle of glacial and continental rocks during the Permian. These deposits masked underlying strata and structures.

The Appalachian folding which gave rise to the numerous multiple-sand fields in the eastern areas and in Oklahoma and Kansas was largely confined to the Northern Hemisphere. In this hemisphere the shelf areas which lie between the central cores and the marginal troughs were frequently submerged below the sea, giving numerous opportunities for the formation and accumulation of oil in the Paleozoic formations. One type of oil deposits associated with sediments laid down on the shelf following mountain uplifts has been described as "flysch" deposits, after the type of sedimentation with which they are associated.

Sub-Flysch Production

The shelf areas contain another type of production which is even more important than the flysch production. This is found in sands and limestones of wide distribution and is exemplified in the United States by the Arbuckle, Devonian and Permian lime and Wilcox sand production. It is this type of production which may have been buried beneath the glacial deposits of the Southern Hemisphere. Unlike the flysch deposits, these sheet-like sediments are productive at long distances from emerging uplifts as well as close at hand. They are productive on broad regional structures like the West Texas limestone reefs, the Barton arch of Kansas, or the northern fields of Mexico. They also produce on smaller local structures in basins, as in the Devonian in Michigan and Illinois. They may be formed over buried mountain ranges as in the Panhandle of Texas or the Nemaha ridge of Kansas and Oklahoma, but they are definitely not associated with the troughs which have become involved in later folding. They are typical shelf deposits and are found only where shallow seas have invaded large areas as in the Mid-Continent region of the United States, the Russian platform or the West Siberia platform. They are, thus, mainly restricted to these three areas in the Northern Hemisphere.

Northern Marine Invasion

During the Mesozoic and Tertiary the sea invaded the platforms from the north. Sediments laid down during this invasion are productive in Wyoming and Montana. The North Atlantic area was also the site of one of these invasions, but most of the area affected has subsided beneath the Atlantic or the North Sea. Enough remains in the British Isles, northern France and Germany to make it possible that important production will be obtained here. The oil fields of Germany already produce from deposits of this type. The Mesozoic invasion of the Russian platform is relatively unimportant, but this is more than made up for by the invasion of the valley of the Ob in Siberia. Sediments deposited during these inroads of the sea lap around the south end of the Urals into the region of the lower Volga where they are productive in the Emba district, and also to the east of the Caspian and in Ferghana in Turkestan. Development of this region may be expected to continue to yield results comparable to those already obtained.

Gulf Marine Invasion

The Mesozoic invasions of the sea from the north had as their counterpart an invasion of the southern United States from the Gulf of Mexico. Cretaceous deposits such as the Woodbine, Glen Rose and Paluxy were laid down during this submergence and all produce large quantities of oil. These deposits are not known elsewhere in such abundance as in the United States and the only known representatives in the Southern Hemisphere are the marginal deposits which have already been discussed.

Tertiary Mountain Building

Beginning as early as the Jurassic and continuing to the present day mountain building has affected two large sections of the earth's crust. The first of these, culminating in the Cretaceous was involved in the Andine Revolution which, starting in Antarctica, completely surrounds the Pacific Ocean. Much of this system has collapsed and lies buried beneath the sea carrying with it large sections of the shelf which lay outside of the outer ranges. The other system extends from the Atlas Mountains in Morocco across Europe and southern Asia to the Pamir. From this region one branch continues to the east while the other

goes to the southeast forming the islands of Sumatra, Java and others and terminating in a great arc where it approaches and is hemmed in between Andine chains and the mainland of Australia (Fig. 2).

Andine System

The Andine system begins in Antarctica where it forms the peninsula of Graham Land. The chains advance far to the east in the South Orkney and South Shetland Islands and then swing back to form the western border of South America. Here it consists of two principal groups of chains, the Andes proper and the coastal ranges. In the foothills belt east of the Andes, there are important accumulations of oil. Also in the foothills belt west of the Coast Range there are other deposits. Possibilities of additional discoveries west of the principal mountain ranges are limited by the fact that much of the foothills belt and the intermontane valleys, where such accumulations are likely to be found, are buried either beneath the sea, as in southern Chile, or beneath deserts as in northern Chile and Peru. However, the Andes chains become more widely separated in Colombia as one branch swings east through Venezuela and the western Coast Range swings northwest through Panama. A third branch forms the Goajira Peninsula west of Lake Maracaibo. Movement has continued in the mountain ranges and this movement has been transmitted to the Tertiary sediments in the intermontane valleys, folding them into structures, many of which produce large quantities of oil. The possibility of finding other large fields in this region is very great as much of the valley region remains to be prospected.

In Central America, the Coast Ranges continue and form the Sierra Madre del Sur of Mexico. They then plunge beneath the Pacific to reappear in Lower California. In California the intermontane valleys again contain large quantities of oil in the San Joaquin Valley, the Los Angeles, Santa Maria and Ventura basins. Of these, the San Joaquin Valley is not a true intermontane valley but represents a depression formed between the Coast Range and the Sierra Nevada which is the western member of the great Basin Range province in which the mountains are formed by large north-south fault blocks. The Basin Range province is, of course, not an important oil-producing area. The Andine system again reappears as a number of islands off the British Columbia and Alaska coasts and at Mt. St. Elias, their character changes. Here, they swing to the west and southwest and form a series of island festoons swinging in great loops through the Alaska Peninsula, the Kuriles, Japan, Formosa and, finally the Philippines and Borneo. Throughout most of their length, both the foreland and the backland have subsided beneath the sea. Occasional oil deposits of minor importance are found in intermontane valleys in Sakhalin and Japan but important deposits are not found until the widespread branching ends of the chains are found in Borneo and Celebes. Here again, as well as in the Philippines, the surface has hardly been scratched and there are excellent possibilities for additional production.

Alpine Mountain System

The Alpine Mountain system occupies for most of its length subsided areas of Hercynian (Permo-Carboniferous) folding. Essentially, it consists of two great series of ranges, one overfolded to the north and the other overfolded to the south. The south ranges, which are folded to the south, form great loops which cut back to the northern ranges in three great tangled areas of complex folding; these are in Switzerland, Armenia and the Pamir. The possibilities for oil are greatest in areas of flysch deposits and also in intermontane regions where the folds open out. Much of the length of the Alpine chains rests on highly folded Paleozoics and little oil occurs in these regions. Thus, the Pyrennes, Alps and Balkans have little prospect of forming important oil-bearing regions.

The northern chains include the Pyrenees, Alps, Carpathians, Balkans, Caucasus, Hindu Kush, Kuen-Lun and Tsing-ling-shan. Throughout the whole length of this chain, there are important deposits only in Poland and Rumania, where the mountains override the foreland, and in intermontane valleys in the Caucasus region. The deposits are in flysch deposits of Tertiary age, the Caucasus deposits resembling the Andine types found in California and Venezuela. The area east of the Caspian is virtually unprospected although Tibet, which is traversed by the Kuen-Luns, has such a relatively thin cover of marine sediments that it appears to have little chance for oil. The small production of China comes from the foothills of the Tsing-ling-shan in Sze-chuen and Shensi and indicates that eventually this area may obtain considerable production.

The southern ranges of the Alpine system are of far greater importance than the northern chains from the standpoint of oil. The areas having the best possibilities in Africa are the intermontane valleys of Morocco and Algeria. Italy's small production comes from in front of the Apennines and the Po Valley offers the largest area of recently deposited sediments in Italy. Where the southern ranges again emerge from beneath the Alps as the Dinaric Alps, they are plentifully associated with oil seeps and the production of Albania is associated with this folding. The chains plunge beneath the Mediterranean, reappearing locally as the island of Crete and the other islands of the Aegean Sea. Here there are asphalt seeps which may encourage prospecting. As the chains of the Taurus Mountains sweep throughout Asia Minor into the mountain knot of Armenia, they do not show any great possibilities for oil in the foothills region, but as the southern chains again swing south as the Zagreb Mountains, the foothills belt becomes one of the most important in the world in Iraq, Iran, Bahrein and eastern Arabia. On swinging to the east near the mouth of the Persian Gulf, the foreland disappears beneath the Indian Ocean and only reappears when the continuing chain, the Suliman Mountains of Baluchistan and Afghanistan swing north to follow the valley of the Indus. From here to Burma the foreland is covered by great alluvial plains, first of the Indus, then of the Ganges and Brahmaputra. Occasionally older rocks appear at the surface and these rocks are folded into structures of the California type. The production of the Punjab, Assam and the Arakan Islands comes from these areas, while that of Burma comes from the Irrawadi trough which has been let down between the Burmese chains and the Shan Plateau to the east.

South from Burma, the chains are submerged again beneath the Indian Ocean, but reappear in Sumatra, Java, and other islands, including Ceram. Here are found the rich fields of the Netherlands

(Continued on Page 26)

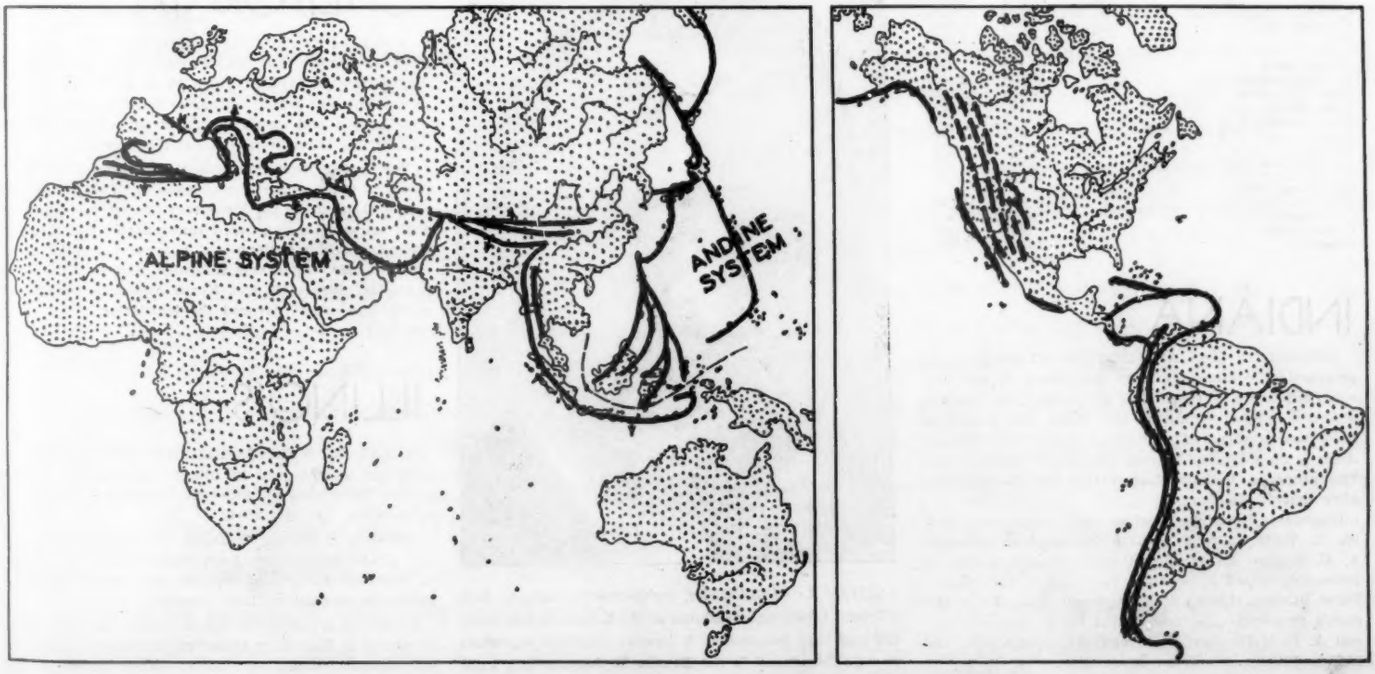


Fig. 2—Alpine and Andine orogeny showing major trend lines (after Schuchert)

STATE CAPITALS...

OKLAHOMA

OKLAHOMA'S ALLOWABLE PRODUCTION for February and March has been set at 400,000 bbl. daily by the Corporation Commission, which removed 11 old fields from the proration schedule. The allowable is 42,500 bbl. daily under the Bureau of Mines estimate of demand for February.

Daily average production in December from the 11 fields now exempt from proration follows: Earlsboro, 6,357 bbl.; Little River, 6,573 bbl.; Mission, 1,250 bbl.; Lucien, 6,320 bbl.; Searight, 1,105 bbl.; Seminole City, 6,498 bbl.; Seminole proper and others, 10,172 bbl.; North Lucien, 420 bbl.; West Doyle, 80 bbl.; King, 65 bbl., and West King, 41 bbl.

The commission added the East Stroud field of Creek County, with a top per-well allowable of 300 bbl. daily.

February and March allowable revisions for classified and unclassified fields follow:

Field—	Daily allowables Jan. (bbl.)	Feb.-Mar. (bbl.)
CLASS B FIELDS		
Allen	4,945	4,800
Billings-Wilcox	5,706	6,000
Hazel	162	200
Moore	1,100	1,000
Olympic	1,069	1,200
Shawnee	1,427	1,600
St. Louis	22,000	20,000
CLASS C FIELDS		
Fitts:		
Cromwell	1,000	1,000
Hunton	1,000	1,000
Wilcox	3,000	3,000
Upper Simpson	9,000	8,000
CLASS D FIELDS		
South Cromwell	119	125
Keokuk Falls-Hunton	325	175
Meridian	60	75
East Okemah	400	350
UNCLASSIFIED FIELDS		
Adams	713	715
Avoca	949	950
East Britton	70	85
Coyle	1,475	3,500
Crescent	1,700	2,000
Cumberland	3,000	6,000
Dill	3,500	4,500
Dora	1,650	1,500
Doyle-Deese	450	375
N. Earlsboro-Wilcox	3,300	3,600
East Cromwell	1,000	2,000
Fox (deep)	185	225
Fox (Hunton)	225	450
Gray	713	750
Hobart	1,000	1,250
West Little River	523	575
Naval Reserve	2,966	3,125
Oklahoma City:		
Lower Simpson	10,280	9,780
Dolomite zone	285	300
Pawhuska	650	650
Prague	1,000	1,500

INDIANA

OPPOSITION HAS ALREADY DEVELOPED to the proposed oil-conservation law introduced in the Indiana Legislature in the middle of January. In hearings before a house committee last week, six opposition witnesses attacked the proposed law. They claimed there is no waste in Indiana oil-producing operations. The proposed Indiana conservation law is patterned after that of Michigan.

Opponents testifying before the committee were W. G. Turbeyville, Evansville independent operator; A. K. Swann, Evansville attorney; Claude Smith of Princeton; Hassil E. Schenck, president of the Indiana Farm Bureau; Harvey Hull, manager of the Farm Bureau's cooperative oil refinery at Mount Vernon, Ind., and A. U. McCandless, Robinson, Ill., president of the Indiana-Illinois Petroleum Association.

Proponents of the law included Ralph Esarey, Bloomington, Indiana state geologist; George R. Jeffrey, Indiana Insurance Co. representative, and Frederick Grumme, Indianapolis independent operator.

The bill, which would give the state Conservation Department control of oil regulation, was introduced by Rep. T. C. O'Connor, of Frankfort, Ind. It is now pending action by the house natural-resources committee.

KANSAS

CRUDE-OIL PRODUCTION OF 196,200 BBL. daily has been fixed for the February allowable in Kansas, an increase of 2,200 bbl. over the January figure and the highest basing point in the state since 1937. Estimated demand in February as determined by the Bureau of Mines is 193,200 bbl. daily, making the state allowable 3,000 bbl. higher than the calculated market requirements.

Currently-producing wells were assigned 193,200 bbl. daily and 3,000 bbl. was added for new wells to be completed in February. The highest state allowable in the proration history of Kansas came in the fall of 1937 when permissible production stood at 200,000 bbl. daily.

TWO BILLS INTRODUCED in the Kansas Legislature constitute "an invitation to federal control" and "strike at the basis of stabilized conditions in the Kansas oil industry" in the judgment of the Kansas Independent Oil and Gas Association. Strong opposition to the bills developed immediately after their introduction by Sen. Kirk Dale and Rep. Chandler Jarvis. The association's opposition is spearheaded by its president, William L. Ainsworth, of Wichita.

In effect, the identical bills introduced in both branches of the Kansas Legislature would make conservation laws in the state impotent since they propose no substitute for abolishment of Corporation Commission proration powers.

"These bills," said Mr. Ainsworth, "would jeopardize millions of dollars worth of capital investment in the western part of Kansas built up over a period of 15 years and would be detrimental to landowners scattered throughout the state who hope for development."

OPPOSES OIL BILLS . . .

WILLIAM L. AINSWORTH, independent producer from Wichita, Kans., and president of the Kansas Independent Oil and Gas Association, is leading vigorous opposition to bills introduced in the Kansas Legislature last week that would legalize special allowables.

WYOMING

AN ADMINISTRATION MEASURE authorizing the governor to execute a contract with other states party to the interstate oil and gas compact has been introduced in both houses of the Wyoming Legislature.

Gov. Nels H. Smith referred to the compact in his inaugural message last week and urged the legislature to give it careful study and described it as a means of determining whether the state is to control its own oil production or permit the control to come under a federal bureau. Wyoming at present has no proration laws and the only proration in the state is that resulting from voluntary cooperation of producers.

MICHIGAN

MORE THAN A DOZEN BILLS directly or indirectly affecting the Michigan oil industry have already been introduced at the current session of the Michigan Legislature. These include: A bill that would authorize the Conservation Department to issue quitclaim deeds conveying fee title, including coal, oil, gas, and other mineral rights to original owners of lands reverted to the state through tax delinquency, permitting original owners to reclaim the land by payment of original sale cost plus 10 per cent; a measure proposing repeal of the act which created the state stream-control commission; a bill to reduce the Michigan gasoline tax 0.5 cent a gallon. The tax is now 3 cents.

CALIFORNIA

A BILL PERMITTING California to join the interstate oil compact has been introduced in the California Legislature by Assemblyman T. J. Doyle of Los Angeles. The bill would authorize participation for a 2-year period and would be under supervision of Richard Sachse, director of natural resources.

The 2-year limitation was included in order to remove as much opposition as possible. This bill was introduced after the Oil Producers Agency had approved such act and recommended that suitable legislation be passed to enable California to become a member of the compact. Mr. Doyle was informed that Bandini Petroleum Co., Sunset Oil Co., North American Oil Consolidated, and others favored the legislation.

ILLINOIS

A TAX OF 5 CENTS PER BARREL on crude oil produced or imported in Illinois is proposed in companion bills thrown into the legislative hopper at Springfield, Ill., last week.

Sponsors of the tax measures have implied that support of the measure has been pledged by certain groups in exchange for a tacit promise that there will be no production-regulatory laws enacted.

Estimates are that the tax of 5 cents on each barrel produced in Illinois or imported, whether by pipe line or overland, would provide $7,000,000 annually. The funds would be applied to payment of old-age pensions.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

John Jones, Buyer

John Jones, farmer, drove his car into a middle-western filling station. He bought 10 gal. of gasoline for which he paid 18 cents per gallon. Before he left he had taken advantage of the free services and had had his tires checked, the windshield cleaned and the radiator filled with water.

This was sufficient gasoline to keep the car going 1 week, during which time it was used by all members of the family in going to school and church, shopping, visiting relatives and friends and carrying on farm work. With the Jones family, as with many millions of others, the car is the essential cog in the week's activities.

Ask Jones or his neighbors how the 18 cents is divided or how it compares with the prices he paid for gasoline a few years ago and the answers will reveal a vagueness as to facts, showing that the oil business has never done a good job in explaining to its customers the essential market features of its business. The division of the 18 cents was:

5.5 cents, federal and state taxes.

5.5 cents, local jobber and dealer.

2.2 cents, rail transportation.

4.8 cents, Mid-Continent producer and refiner.

This division is based on so-called "normal" marketing conditions. In many sections of the country there are more subnormal than there are normal pricing points so that the rule has become the exception. In these cases, the tax collectors and transportation agencies continue to get theirs but everybody else takes less. In many instances the refinery returns have dropped to 4 cents or less with the third-grade gasolines bringing little more than the delivered cost of crude at Mid-Continent plants.

A superficial study of last year's operations will reveal the reasons for these unsatisfactory market developments. Unwarranted expansion in refinery operations resulting in excessive gasoline stock accumulations, was the immediate cause. Back of these manufacturing operations was the failure to maintain a national balance in crude-oil supply and demand.

The petroleum industry needs to be immediately concerned with that 4.8 cents, or 26 per cent part that they are getting of Jones' 18 cents. Jones, himself, is not going to do anything about it. If the price drops to 17 cents at another station he will go there, and if farther down the street a prize is given that dealer will get his business.

When he drove into the 18-cent station, Jones didn't know that the latest government report shows that the wholesale index of petroleum products is 49 in contrast to an index for all commodities of 78. He wouldn't have been particularly impressed if someone had told him that the petroleum index is 9 points less than it was a year ago, while the prices for shoes and clothing which he bought on the same trip are higher than they were early last year. The clothing index is 86 and shoes 107.

Jones' attitude is that of the typical consumer who buys at the lowest possible price. He made no remonstrance when his state added 1 cent to the gasoline tax and the federal Government increased its take from 1 to 1½ cents, last year. It is no concern of his if the oil refiners absorb both of these increases in the price they receive for the product.

The petroleum industry in this country this year will have a market for more than 650 million barrels, or 27½ billion gallons of gasoline. Thus, a change of 1 cent a gallon means 275 million dollars in the gross revenue of the industry. Any downward revision from present levels can be added to losses.

A 14-billion-dollar industry has to look to gasoline for the bulk of its revenue. Right now at many refineries motor fuel is selling at the lowest price since it ceased to be a byproduct. The remedy for this situation rests with the producers and sellers, not the Joneses.

Army-Navy Make Commitment For 1,000,000-Bbl. 100-Octane

WASHINGTON, D. C., Feb. 4.—The Army and Navy, working jointly, have made commitments for approximately 1,000,000 bbl. of 100-octane gasoline for storage against future demands, according to a compilation of data here. Defense and petroleum industry officials have finished the "spade work" on a program envisaging a 25 per cent expansion in the 100-octane producing capacity by the middle or latter part of 1942 which will involve expenditure of approximately $30,000,000.

First suggestion to the petroleum industry that it expand its aviation-gasoline capacity was outlined in a letter several weeks ago by W. S. Farish, president of the Standard Oil Co. (New Jersey) and chairman of an all-industry committee appointed by the American Petroleum Institute to coordinate defense and industry efforts.

The Army and Navy joint orders covering about 1,000,000 bbl. of 100-octane gasoline are distributed among 12 supplying companies and the total consideration is approximately $8,000,000, or an average of 19 cents per gallon. The service organizations are reported planning to store a bulk of the 1,000,000 bbl. of aviation fuel now on order. Purchase contracts have been based on funds available to the service branches through regular appropriation.

Original Program Modified

When originally projected, the aviation-gasoline storage program contemplated the storing of 7,500,000 bbl., using $50,000,000 allocated for that purpose by the Reconstruction Finance Corp. The program was later cut to 3,000,000 bbl. in storage at the end of 1941, which, based on the course now taking shape by independent purchases for the service branches, may be subjected to further modification.

Capacity to produce 100-octane fuel in United States refineries is now nearly four times the total 1939 domestic demand for all grades of aviation gasoline. Total United States demand in 1939 for all grades of aviation fuel amounted only to 3,100,000 bbl. These fuels ranged from 87 to 100 octane, with the bulk 91 octane or less.

Currently, refiners are qualified to produce about 30,000 bbl. of 100-octane gasoline daily, with a maximum of 3 cc. per gallon of tetraethyl lead. An increase of the permissible use of lead to 4.5 cc. per gallon would raise the current producing capacity for 100-octane gasoline to 45,000 bbl. daily, it was indicated in the survey conducted recently by Mr. Farish.

Few details have been made available in recent months on construction work by individual companies that would add to the 100-octane-gasoline producing capacity of the industry. There is assurance from construction contractors and refinery-department managers of large companies that plans are either now on the drafting boards or in the early stages of prosecution that will maintain capacity at approximately its present comfortable margin above consumptive requirements.

Industry to Foot Bill

Facilities which the oil companies expect to erect with their own funds in order to handle the increased demand of the military air service for high-test, blended fuel are viewed by defense officials as the type of industrial expansion which will be useful to the companies in handling continued military and civilian requirements. For that reason, it is said, the companies will be given the privilege of accelerating the rate of depreciation on the installed plant in line with the special tax amortization scheme worked out for the defense program last summer.

The tax privilege for defense contractors permits a company to write off the equipment for tax deduction purposes in a 5-year period. Otherwise, the depreciation might be allowed only over a much longer period, possibly 15 or 20 years. There is no present intention of working out special plant-facilities contracts under which the contracting company would be fully reimbursed for the installation, as is the case in some other phases of the defense program. The complete-reimbursement incentive to plant construction is being incorporated as an optional privilege on certain types of equipment added by the oil industry such as the toluene-producing facilities being built by Humble Oil & Refining Co. In such cases, however, the oil companies are trying to relieve production and supply deficiencies of other industries.

Stanolind Replaces Humble as Crude Purchaser in Four Gulf Coast Pools

Stanolind Crude Oil Purchasing Co. will commence buying crude oil from four pools in the vicinity of Houston, Tex., on March 1. These pools are Fairbanks, Satsuma, Rosslyn, and North Houston. At the present time all the oil in these areas is purchased by Humble Oil & Refining Co., but after March 1 this company will withdraw as buyer at these points and the purchases formerly made there by Humble will be made by Stanolind.

It is anticipated that between 6,000 and 7,000 bbl. will be run daily from these pools in March. Negotiations are now being carried on by Stanolind Pipe Line Co. for the purpose of providing for delivery of the oil through the gathering system in the field now owned and operated by Humble Pipe Line Co. The Humble system now serving these pools may be acquired as a whole or in part by Stanolind.

A discussion of tentative arrangements by Stanolind Pipe Line Co. for the movement of oil north from the Gulf Coast and East Texas will be found in the Pipe-Line Activity news on Page 57 of this issue.

Hold Hearing on Application For Unit Operating Agreement

EL DORADO, Ark., Feb. 4.—Hearing was held here today by the Arkansas Oil and Gas Commission on application of Marine Oil Co. et al seeking approval for an agreement for the unit operation of a portion of the Jones sand zone of the Shuler field, Union County.

Applicants joining in the unit agreement for which approval is sought own 140 of the 146 wells producing from the Jones sand. More than 130 royalty owners holding more than 60 per cent of the royalty interest under the 140 wells have agreed to the unit-operating plan.

Petitioners also asked for authority to construct and operate a repressuring plant and for establishment of a formula with respect to the allowable production of Jones sand wells, either within or without the unitized area.

Joining Marine Oil Co. in the unit petition are Lion Oil Refining Co., Phillips Petroleum Co., Texas Canadian Oil Corp., Atlantic Refining Co., Crescent Drilling Co., Inc., Delta Drilling Co., Sklar Oil Corp., and several individuals.

Testimony on the McKamie pool in Lafayette County, Arkansas, was taken at the El Dorado hearing dealing with well spacing, casing rules, gas-oil ratio, and the method of allocating production.

Phillips and Louark Effect Another Property Trade

SHREVEPORT, La., Feb. 4.—A trade of producing properties has been concluded between Phillips Petroleum Co., Bartlesville, Okla., and Louark Producing Co., Shreveport, subsidiary of Standard Oil Co. of Louisiana.

Louark will assume operating control of Phillips properties in the Magnolia, Arkansas, field February 15. Phillips acquired Louark properties in the Smackover, Arkansas, field.

"A trade of oil properties," relates a joint statement on the transaction, "has been completed by the Phillips Petroleum Co., Bartlesville, and the Louark Producing Co., Shreveport, La. In the exchange, Phillips acquires Louark's properties at Smackover, Arkansas, and Louark acquires the Phillips holdings in the Magnolia, Arkansas, field. The trade, involving 59 wells and approximately 1,150 bbl. of daily oil production, will be effective February 15."

Two California Companies to Build Speedy Tankers

SAN FRANCISCO, Calif., Feb. 4.— Plans have been completed for the construction of three ocean-going tankships which will be the largest and fastest vessels of their kind owned on the Pacific Coast.

Union Oil Co. of California has awarded contracts for the construction of two additional tankships for its offshore fleet to Bethlehem Steel, W. L. Stewart, Jr., vice president, announced. The new tankers are to be built at Bethlehem's Sparrows Point, Md., yards.

The new vessels will be 501 ft. in length with a molded breadth of 68 ft., molded depth of 37 ft., and will have a deadweight carrying capacity of 100,000 bbl.

Standard Oil Co. of California will build a new boat with these specifications: Approximate deadweight capacity, 18,200 tons; nine main cargo tanks, with a volumetric capacity of 152,000 bbl.; propulsion equipment consists of steam turbines developing 8,200 shaft hp.; overall length, 547 ft.; breadth, 70 ft.; depth, 40 ft.; speed of 15½ knots is specified.

The new craft will augment the present fleet of 18 ocean-going tankers plying under the house flag of this company.

Standard of Texas Moves to El Paso Headquarters

EL PASO, Tex., Feb. 4.—Headquarter offices of Standard Oil Co. of Texas, subsidiary of Standard Oil Co. of California, will be established in El Paso, Tex., under the direction of E. H. Todd, newly appointed vice president. Operations of the company have been previously directed from San Francisco, Calif.

The board now consists of H. D. Collier, chairman, San Francisco; A. J. Cunningham, president, Houston, Tex.; E. H. Todd, vice president; R. J. McIntyre, secretary-treasurer, and W. H. Burgess, all of El Paso.

Louisiana Reorganizes Department Of Conservation

BATON ROUGE, La., Feb. 4.—By proclamation of Gov. Sam H. Jones, reorganization of the Louisiana Department of Conservation has been effected as provided by the amendment voted by the people in November. The order sets up the Department of Minerals, a separate body from the Conservation Department. The Department of Minerals, comprising a three-man Board of Minerals and a director of minerals, will take over all state duties pertaining to oil, gas and other minerals formerly under supervision of the Minerals Division of the Department of Conservation. B. A. Hardey, former conservation commissioner, resigned, attended the reorganization to accept a post on the newly created Board of Minerals, and Joseph L. McHugh, of Crowley, was named the new director of minerals.

Oil Refining Industry Large Consumer of Chemicals

WASHINGTON, Feb. 4.—Volume and variety of the principal raw materials consumed by the 485 petroleum-refining establishments in the United States are revealed in a report issued by the Bureau of Census.

A year's requirement of crude petroleum amounts to 1,250,256,188 bbl. This figure reports the 1939 consumption. It was greater by 89,000,000 bbl. than the 1937 consumption.

Partially refined oils, tops, waxes, etc., amounted to more than 63,000,000 bbl. Natural gasoline consumed was 51,785,031 bbl.

Other important products used in the petroleum-refining business in a year are sulfuric acid, 924,589 tons; soda ash, 11,318 tons; caustic soda, 99,297 tons, and fuller's earth, 158,386 tons.

New Legislation May Diminish Regulatory Red Tape

By HENRY D. RALPH

WASHINGTON, D. C., Feb. 4.—Substantial relief for business from the costs, delays, and uncertainties of federal regulation is promised in legislation now pending in Congress as the result of recommendations just made by the attorney general's committee on administrative management.

New plans to "regulate the regulators" are proposed by this committee as the administration's answer to the Logan-Walter bill vetoed last year by the president. But instead of giving a clean bill of health to federal regulatory agencies the committee criticized them severely and made recommendations which in some respects are more drastic and revolutionary than the Logan-Walter bill.

Every business concern having dealings with the federal Government—and that means all business—would be affected by the program, for it would apply to all regulatory agencies, boards, commissions, bureaus, and departments, new or old, and would alter the procedure of the Interstate Commerce Commission, Federal Trade Commission, National Labor Relations Board, Federal Power Commission, Bureau of Internal Revenue, Interior Department, Wage and Hour Administration, Securities and Exchange Commission, and all the rest.

Whereas the Logan-Walter bill proposed greater court review of the rulings and regulations of administrative agencies, the majority of the attorney general's committee recommends reform of the agencies from within. Two minority reports ask for more court review than is possible at present, and the old Logan-Walter bill has also been reintroduced in Congress, so the entire field of the many complaints of business against arbitrary actions by regulatory agencies will be under discussion when the legislation is taken up. Out of this is certain to come a law to reform administrative procedure to the benefit of all business.

Red Tape Due for Trimming

In general, the pending recommendations would separate the functions of judge and prosecutor within the agencies, curtail expensive hearings, institute greater use of informal procedure, require advance or declaratory rulings, give regulated business a square deal on publicity, and give the public more information about actions and policies of the multitudinous federal bureaus and commissions. All the agencies would have to submit to a uniform pattern of procedure, and in addition a new agency would be created, the Office of Federal Administrative Procedure, to supervise the regulating agencies and to hear complaints of business against their actions.

One of the most sweeping and revolutionary proposals is that all hearings be conducted by "hearing commissioners" whose functions would be analogous to those of trial judges in the courts, and whose decisions would ordinarily be final. Instead of being under the control of the agencies themselves, these hearing commissioners would be appointed by the new O.F.A.P., on nomination of the agencies to which they would be assigned, and they would have terms of 7 years and would be well paid so that they would not be under the influence of the agencies. Instead of making a proposed report the hearing commissioner would make a final decision. This decision could be appealed to the commission or department head by the individual or company concerned or on motion of the head of the agency. Agency investigators and prosecutors would not be permitted to participate in the decision nor in the appeal, except to present evidence and arguments in public hearings, and the agency heads would be required to make decisions themselves and not rely on review attorneys or other subordinates.

Importance of Procedure

The importance of this procedure is seen when contrasted with practices now in use. In the Federal Trade Commission, for instance, the trial examiner's report is kept secret, and there are often long delays between its completion and the final decision of the commission. In the N.L.R.B., the board itself reviews all proposed reports in theory, but relies heavily on the recommendations of review attorneys, a practice which has been severely criticized as not being in accord with proper judicial procedure. In many other agencies, particularly where a decision is nominally made by a cabinet member, the real decision is made by subordinates whose identity may never be revealed. In order to permit agency heads to have more time for deciding appeals, it is recommended that they delegate to responsible officials a great many details now handled by them.

Another revolutionary proposal is that all agencies be empowered and required to give advance or declaratory rulings on the request of a party subject to regulation. Any interested party desiring to know his rights and duties under a federal law could apply to the enforcement agency and obtain a ruling as to how the law applies in his particular situation. This ruling would be binding on both the party and on the agency, and could be appealed to the courts in the same manner as a final order based on hearings and a decision. This would greatly speed up the regulatory process, particularly in connection with a new law or a new business practice where there are few precedents by which business can be guided.

In making regulations, all agencies would be required to give the regulated business fuller opportunity to participate in drafting the rules. Formal hearings are not suggested in all cases, as it is pointed out that better and quicker results may often be obtained through the use of informal hearings, conferences, and consultation. After a regulation or an amendment is promulgated, it could not take effect for at least 45 days, except in special circumstances. Any interested party could apply for a change in a regulation and the agency would be required to report to Congress on the disposition of such applications.

Expensive Hearings Condemned

Expensive and time-consuming formal hearings are condemned by the committee, and pending legislation would require informal procedure wherever possible. Instead of courtroom type of evidence, the necessary information on which to base an order or ruling would be gathered by correspondence, stipulation, affidavit, agreement, or informal conference. There would also be wider use of stipulations to settle complaints, under which a business concern would not be stigmatized by charges of past wrong-doing but would agree to follow a certain course of action in the future. Every decision would have to be accompanied with a written opinion giving reasons for it, in marked contrast to the present practice of many agencies, notably Federal Trade Commission, which seldom give reasons for their action.

A great many other recommendations are made for changes of lesser importance, all designed to prevent regulatory agencies from acting in an arbitrary manner, make deciding officials responsible for their decisions, cut down red tape and delays, keep the public informed of the activities of administrative agencies, facilitate dealings with the public, and inform business as to what the policies, structure and organization of the agencies are. Many agencies are discussed in detail in the report, with suggestions for procedural changes not contemplated in the draft legislation. For example, it is recommended that the Federal Trade Commission not give publicity to a complaint against a business concern until the respondent has had an opportunity to answer, and then that the commission give equal publicity to the complaint and the answer, if any at all. In discussing the activities of the General Land Office, it is recommended that where an application for an oil and gas lease is denied because of information supplied by the Geological Survey, the applicant be given a copy of the survey report for use in appealing to the secretary of the interior if desired.

The committee was appointed by the attorney general nearly 2 years ago, and was composed of prominent lawyers, judges, and law professors, headed by Dean Acheson, former assistant secretary of the treasury and recently named assistant secretary of state. The majority concluded that reform of administrative procedure would eliminate need for wider judicial review, but a minority report disagreed and two different proposals were presented for giving the courts more control over regulatory bureaus and commissions.

In addition, one of the minority reports includes a bill to create a code of administrative procedure which lays down detailed requirements and regulations to be followed by regulatory bodies. The majority stated that this proposal appealed to them at first but their final conclusion was that it would be unnecessarily burdensome to fit all types of regulatory activity into the same detailed pattern and that the general reform proposals would be sufficient at least for the time being.

Cities Service Subsidiaries Affected But Little by Registration of Parent Company

NEW YORK, Feb. 4.—The oil and nonutility business conducted by subsidiaries of Cities Service Co. will be affected only slightly by registration last week of the parent company under the Public Utility Holding Company Act. Rules under which the holding company registered with the S.E.C. permit broad exemption of the oil and nonutility subsidiaries from the details of regulation provided for in the act.

A more limited exemption is available to the holding company itself in its dealings with subsidiaries.

As a result of the registration, all companies in the Cities Service system will become subsidiaries of a registered holding company within the meaning of the act.

In discussing the registration, W. Alton Jones, president of the Cities Service Co., said: "The Securities and Exchange Commission in its opinion in the matter of Cities Service Co.'s claim for exemption from registration under the Public Utility Holding Company Act stated that it appreciated the difficulties of the company with respect to its nonutility subsidiaries and instructed its staff to be available for discussion with representatives of the company with regard to the granting of certain exemptive rules or orders."

Use of Depleted Gas Wells For Storage Increasing

Use of depleted or semidepleted gas fields for storage of gas injected from other sources appears to be gaining momentum in the northern and eastern parts of the country.

Michigan Consolidated Gas Co. has received S.E.C. approval on the purchase of the Austin gas field in Mecosta County, Michigan, 8 miles southeast of Big Rapids. Austin field properties of Taggart Brothers have been acquired by Michigan Consolidated for consideration of $825,000.

Glenn R. Chamberlain, vice president and general manager of Michigan Consolidated, announced that the Austin field was acquired for the projected purpose of using it for storage of Texas natural gas after the field's reserve is entirely depleted. Grand Rapids and Muskegon are the principal cities served by the Austin field which is considered capable of storing 5,500,000,000 cu. ft. of injected gas.

The Sylvania Corp., an affiliate of Pennsylvania Gas Co., was granted permission last week by the Pennsylvania Public Utility Commission to lease 15 wells and the leases they cover for storage purposes.

Two Coastal Wildcats Are Pool Openers

HOUSTON, Tex., Feb. 4.—Humble 1-B Mauritz, a wildcat located in the Laward area, Jackson County, Texas, showed promise of opening a new Frio sand field for the county as a 10-minute drill-stem test at 5,210-35 ft. recovered 2,070 ft. of 23.5-gravity oil and tested 75-lb. working pressure. The well is located in Lot 10, B. J. White Survey. About 1 mile south of the company's 1 Egg, a recent dry hole which logged several interesting showings.

In the Chenango area, Brazoria County, J. Newton Rayzoe 1 J. W. Christian is reported to be flowing 16 bbl. of 34-gravity oil per hour through a ⅛-in. choke while testing through perforated casing at 8,566-75 ft. Location is in the William Parker Survey.

Pressure-Maintenance Plant Planned for Hull-Silk

WICHITA FALLS, Tex.—Plans for construction of a pressure-maintenance plant in the Hull-Silk field of Archer County, North Texas, are being studied by the some 40 operators in that field. The group is considering erection of a cooperatively constructed and operated plant with all producing acreage being unitized. Also plans for having the plant built by a natural-gasoline manufacturing company with the producers waiving their gas rights until the plant is placed on a profitable basis are being discussed. Phillips Petroleum Co. is reported to be considering building a plant along the latter lines, and in recent months both Continental Oil Co. and Hanlon-Buchanan, Inc., have studied possibilities of the field.

There are some 400 producers in Hull-Silk, most of them being completed in a 4,300-ft. Strawn sand. Original bottom-hole pressure of this pay was in the neighborhood of 2,300 lb., but present pressures are 700 to 1,000 lb. below this. Average gas-oil ratio of the field is about 500 cu. ft. per barrel, with many of the wells producing at ratios around 300 cu. ft. Thus operators feel it important that as much gas as possible be returned to the pay.

Presidential Proclamation Orders Embargo on Oil Machinery

WASHINGTON, D. C., Feb. 4.—An embargo on exports of oil-well and refinery machinery, except by license, was ordered today, effective February 10, in a presidential proclamation.

License control over exports of certain equipment from the United States has been applied since the middle of last year with respect to belligerent countries. This new exercise of export control may be aimed at efforts to rehabilitate refineries in France and in the Low Countries. Any effort on the part of the U.S.S.R. to increase its refining capacity or the quality of its products available to Germany might be successfully blocked by this new equipment-export embargo. Rumors have reached this country that the U.S.S.R. planned a large refinery-construction program this year. The prohibition also may be linked to the domestic plan which envisions a 30 per cent increase in the 100-octane gasoline-producing capacity by the early part or middle of 1942.

Two-Year Extension of Illinois Compact Relationship Asked

SPRINGFIELD, Ill., Feb. 4.—Extension of the Illinois relation to the Interstate Oil Compact for 2 years, ending September 1, 1943, is provided in a bill introduced in the legislature here today.

The bill was introduced by F. W. Rennick, of Buda, Ill., with the reported approval of Gov. Dwight H. Green. Illinois' relationship with the interstate compact is passive. The state has not occupied a voting-membership position for several months.

Characteristics of Hawkins Crude Vary From East Texas

Crude from the Hawkins field in Wood County, Texas, varies substantially from Woodbine oil in the East Texas field.

A partial analysis of crude from the Rotondi and others 1 Cobb, second completion in the Hawkins field, reveals the following characteristics:

Mixed base crude, 27.8° A.P.I. gravity; zero pour test; sulfur 2.2 per cent; gasoline 18 per cent, with 368° end point, 48 octane; kerosene 12 per cent, 513° end point; remainder residue. On cracking, the residue showed 25.5 per cent sweet gasoline and 39.5 per cent fuel oil.

DEATHS

JOHN DARR, 76, one of the pioneers of the pipe-line business, died at the Presbyterian Hospital, Pittsburgh, Pa., January 27, following a short illness. Death was caused by pneumonia. Mr. Darr was first employed as a messenger by the Standard Oil Co. and later became a telegraph operator and worked throughout the eastern fields. He then became superintendent in the telegraph department of the National Transit Co., with headquarters in Oil City, and remained there until 1912 when he was made general manager of the telegraph lines of the Southern Group of Pipe Lines and a director, with headquarters in Pittsburgh. He retired in 1929. He leaves a son and a daughter.

HARRIE WINGROVE, 74, oil producer in the Knapp Creek area for 25 years, died at his home at Olean, N. Y., January 26. Ill following a heart attack suffered on January 21, he was the victim of a second attack January 26. Born in Indiana, Pa., October 16, 1866, he resided in Knapp Creek for 25 years before moving to Olean recently. He leaves his widow, two step-daughters and a step-son.

JOHN S. SATTERLEY, 65, traffic manager for the Princeton Oil Co., died last week at Shreveport, La. Mr. Satterley was born in 1875 in Washington, La. In 1908 he went to work for Waters-Pierce Oil Co. and later held positions with the Texas Co. and Caddo Oil Refining Co. In 1930 he became affiliated with Atlas Oil Co., then took his position as traffic manager for the Princeton company. He was also traffic manager for Sparco Gasoline Co. His widow and two sons survive.

FRANK L. HICKS, 80, former employe of the Prairie Oil & Gas Co., died January 28 at his home in Hennessey, Okla., following a long illness. Mr. Hicks was retired in 1927 on pension, the first employe to be retired under the company's plan. His position with Prairie was as superintendent of production in Osage County.

WALTER L. BRAGG, 58, former accountant for Skelly Oil Co., Tulsa, died at his home in Tulsa last Sunday. Death was attributed to a heart ailment. Mr. Bragg had been a resident of Tulsa for 24 years. He had been connected with the Skelly company for 19 years until his retirement 2 years ago. Since that time he has been semiactive in real estate dealings. His widow, a son and a daughter survive.

M. A. CHAMBERS, vice president and treasurer of the Panhandle Producing & Refining Co., died in a Wichita Falls, Tex., hospital February 1 after a long illness. He was 65.

THE MARKETS*

CRUDE OIL: Universal adoption of 100 per cent tank tables for future crude-oil purchases in Oklahoma and Kansas implies strengthening of the Mid-Continent market. The implication arises chiefly from the support accorded the move and the timing when competition for Mid-Continent connections is at the highest point in years. Arrangements of pipe-line facilities for northern movement from Texas points, when the need arises, is another indication of the crude-market strength.

Sohio Corp., effective February 1, 1941, increased Carmi and Storms City crude, White County, Illinois, 5 cents per barrel, making the posting there $1.10.

REFINERY: Motor gasoline meeting regular specifications was offered on the Gulf Coast last week at a new low of 3⅞ cents per gallon. All refinery markets report only routine inquiry for gasoline. Residual fuel oils are actively sought in the Mid-Continent but suppliers are unable to quote on more than limited spot business. Lubricating-oil prices are stiffening in the Mid-Continent and Gulf Coast in sympathy with higher quotations in the Pennsylvania region.

TANK-WAGON AND POSTED-DEALER: Dealer tank-wagon prices were advanced 0.5 cent per gallon throughout the lower peninsula of Michigan February 3 and a similar advance was made at subnormal points in Nebraska. Dealer kerosene tank-wagon prices drifted off 0.2 cent per gallon in New Jersey and light fuels were generally soft throughout the Atlantic seaboard territory.

FINANCIAL: Oil securities drifted lower following the trend of other stocks. Average of 30 representative stocks for the week ended February 1: High, 23.70; low, 22.56; close, 22.68. Week ended January 25: High, 23.75; low, 22.97; close, 23.52.

*Detailed information in Market Section.

PENBERTHY PRODUCTS

Reflex

DROP FORGED STEEL LIQUID LEVEL GAGE

EMPTY SPACE SHOWS **WHITE** | LIQUID SHOWS **BLACK**

* * *

Transparent

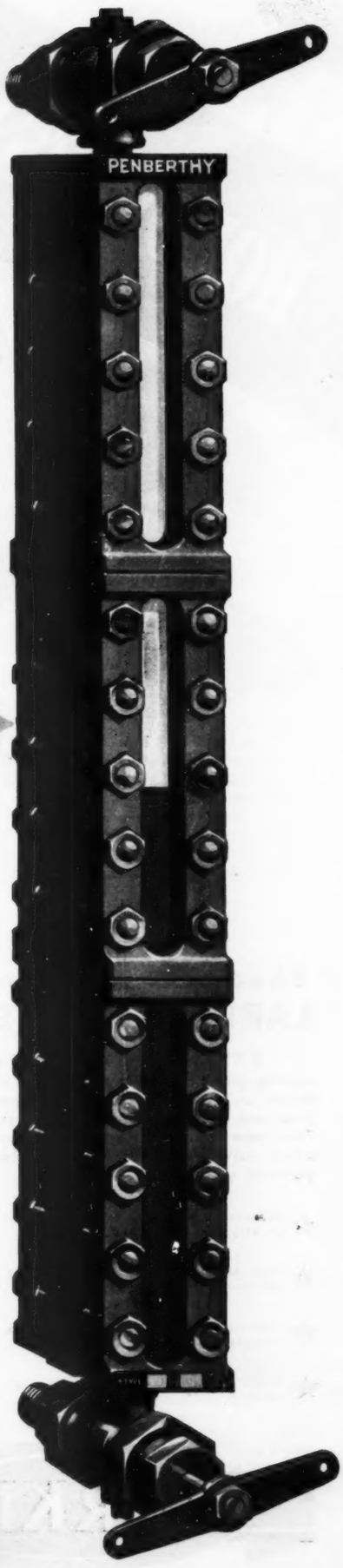
DROP FORGED STEEL LIQUID LEVEL GAGE

USED TO OBSERVE COLOR AND DENSITY OF LIQUIDS UNDER HIGH PRESSURES, AND/OR TEMPERATURES

These gages are made of alloy temperature resisting steel and are of the highest quality throughout. Liquid chamber (both single and multiple section) is made from a solid block of steel to assure perfect alignment and rigidity. Frame has extra heavy beam at each end and glass chamber is accurately machined to contour of glass providing full metal backing for gaskets. Gage valves are drop forged steel with stainless trim.

These gages are available in any length and for various pressures and temperatures. All Penberthy gages conform with A. P. I.—A. S. M. E. requirements.

PENBERTHY INJECTOR CO.
DETROIT, MICHIGAN
Canadian Plant: WINDSOR, ONTARIO



HOLDS 175 TONS

That's the Brand of Strength Built Into
LARKIN CASING SPIDERS AND SLIPS

A 175-ton load is equivalent to 17,500 feet of 7" O.D. 20-pound casing, yet that's the amount of this size pipe the Larkin Casing Spider holds . . . with no distortion. Larkin Spiders in field service the world over are regularly proving their strength far beyond load requirements. They are likewise regularly proving the extra value of the numerous other advantages assured by their better design and construction, as pointed out here:

- Improved and convenient slip handles of wire rope and pipe.
- High grade heat-treated casting for uniformity and strength
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- Flange completely covers and protects the well in permanent installations.
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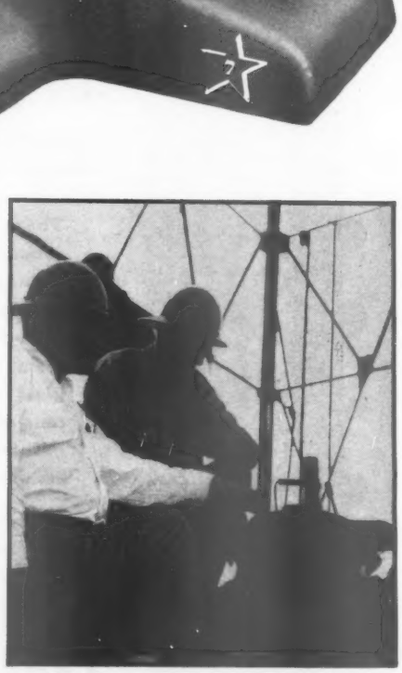

Field men agree the Larkin Spider makes their jobs safer . . . and easier.

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International

Venezuela . .

425,062 Bbl. Daily in December Is 1940 Low

VENEZUELA'S daily average crude-oil production in December fell to 425,062 bbl., the lowest figure reported in 1940. The month's production total of 13,176,930 bbl. was slightly higher than for November but the daily average was off approximately 12,000 bbl.

The most substantial decline of any field in Venezuela for December was suffered by Tia Juana, where the withdrawals fell 428,737 bbl The drop in Tia Juana was only partly offset by an increase of 207,262 bbl. in Lagunillas production and by a gain of 313,590 bbl. in the Quiriquire field.

Increased production from the Oficina field, the country's largest reserve of high-gravity oil, continues as a feature of Venezuelan oil operations. The Oficina field is now the fourth largest producing area in the country. An increase of 121,000 bbl. was scored in December by Oficina over November production.

The demand for high-gravity crude from Venezuela has not suffered from closure of the European market in proportion to that for heavy-fuel-producing oils in the Lake Maracaibo district. Approximately 10,000 bbl. of Latin-American crude, drawn mostly from the Oficina field, started moving into Canada in December via the network of pipe lines across the northeastern section of the United States.

Mene Grande Oil Co., Gulf subsidiary, has become the largest individual producing company in Venezuela partly through its position as operator of the Oficina field. The combined production of subsidiaries and affiliates of Standard Oil Co. (New Jersey) remains at the head of the list followed by the Shell group of companies. A half of Mene Grande's Oficina production is divided equally between International Petroleum Co., Ltd., and Shell.

Standard Oil Co. of Venezuela, wholly owned subsidiary of Creole Petroleum Corp., which in turn is owned chiefly by Standard of New Jersey, increased its December production by 313,590 bbl. over November output. Most of the Standard of Venezuela increase came from the Quiriquire field where December production of 1,905,350 bbl. was 313,590 bbl. greater than November output.

There were 24 shipping fields listed on the December production report. Los Caritos, the new eastern Venezuela field first opened 6 months ago by the Texas Co. (Venezuela) Ltd., was returned to production in December ending an absence since September. The new El Roble and San Joaquin fields, in the State of Anzoategui, increased their combined output in December to 206,365 bbl. compared to 191,720 bbl. in November.

Petroleum exports from Venezuela in December declined to 9,822,005 bbl., a loss of 236,834 bbl. compared with November. Exports by Standard of Venezuela and Venezuelan Oil Concessions, Ltd. increased over November but the gains were insufficient to offset declines by Lago Petroleum Corp. and Mene Grande.

Figures on production by companies and fields and on exports by companies in the following table were converted from original data at the rate of 6.703 bbl. per metric ton.

PRODUCTION BY COMPANIES

(All figures in barrels)

Company	1940 December	1940 November
Caribbean Petroleum Co.	898,825	937,897
Venezuelan Oil Concessions, Ltd.	2,711,745	3,004,145
Colon Development Co.	404,115	411,591
Lago Petroleum Corp.	2,806,015	2,956,360
Mene Grande Oil Co.	3,562,695	3,432,921
British Controlled Oilfields, Ltd.	20,450	20,411
Central Area Exploitation Co.	51,405	50,326
Standard Oil Co. of Venezuela	2,694,265	2,290,536
Compania de Petroleo Lago	23,520	22,817
Socony-Vacuum Oil Co.	2,110	2,956
Texas Co. (Venezuela), Ltd.	1,785	.....
Totals	13,176,930	13,129,960

PRODUCTION BY FIELDS

Field	December	November
Cabimas	1,183,195	1,390,430
Lagunillas	3,052,330	2,845,068
Tia Juana	2,712,155	3,140,892
Bachaquero	161,025	177,817
La Concepcion	59,870	59,315
La Paz	40,345	42,631
Mene Grande	898,825	937,897
El Cubo	404,115	411,591
Cumarebo	88,005	46,707
Las Palmas	1,655	2,138
El Mene de Mauroa	20,450	20,410
Hombre Pintado	51,405	50,326
Quiriquire	1,905,350	1,591,760
Pedernales	139,300	136,084
Temblador	334,930	323,808
Oficina	1,651,285	1,530,295
Jusepin	258,005	224,363
Santa Ana	415	791
San Joaquin	126,305	120,580
El Roble	80,060	71,139
El Tigre	2,520	1,662
Guario	2,110	2,956
Socororo	1,490	1,300
Los Caritos	1,785	.....
Totals	13,176,930	13,129,960

EXPORTS BY COMPANIES

Companies	December	November
Caribbean Petroleum Co.	179,420	183,448
Venezuelan Oil Concessions, Ltd.	2,800,335	2,599,195
Colon Development Co.	361,595	410,968
Lago Petroleum Corp.	1,800,870	2,243,548
Mene Grande Oil Co.	3,076,200	3,283,103
British Controlled Oilfields, Ltd.	77,000	59,603
Standard of Venezuela	1,526,590	1,278,524
Totals	9,822,005	10,058,389

Rumania . .

Government Protests Seizure Of Romano-Americana Line

STRONG protest over the Rumanian Government's proposal to pay for the $1,000,000 pipe line seized from Romano-Americana with 25-year bonds has been made by the U. S. Department of State. Franklin M. Gunther, United States minister at Bucharest, has advised the Rumanian foreign office that the proposal to pay for the pipe line with Rumanian bonds fell short of the "prompt, just and adequate" compensation this Government has demanded for its nationals wherever their property abroad is seized.

Acting on Secretary Hull's instructions, Mr. Gunther proposed that Rumania either return the pipe-line properties or negotiate a settlement with Romano-Americana upon an acceptable basis.

Romano-Americana, a subsidiary of Standard Oil Co. (New Jersey) and the only large American operator in Rumania, operated a line from the Ploesti producing region to the mouth of the Danube.

All Rumanian pipe lines were nationalized in November when the German domination of internal affairs became complete. While the seizure of the lines was carried out in the name of the Rumanian Government there is little doubt that it was done at the direction of German authorities as insurance against interruption of deliveries to the Reich.

Mexico . .

Production in October Highest Registered Since Expropriation

CRUDE-OIL production from Mexico increased to 135,302 bbl. daily in October, the highest reported average withdrawal since the expropriation of private properties in 1938. Accumulative production for the first 10 months of 1940 totaled 32,263,131 bbl., a daily average of 105,780 bbl. for that period.

The highest previous average production for 1940 was in July when 128,045 bbl. daily were taken from the Mexican fields. Withdrawals declined to 125,637 bbl. daily in August and to 123,637 bbl. daily in September.

Most of the October increase came from the Poza Rica field which produced 2,848,294 bbl. during the month, a daily average of 91,880 bbl. compared to 84,027 bbl. daily in September.

Word circulated from Washington last week that the Department of State is insisting more vigorously for a settlement of the expropriation dispute between private companies and the Mexican Government. Ambassador Najera is reported in Mexico City discussing a phase of negotiations.

PRODUCTION BY DISTRICTS

(Figures in barrels)

District—	October	September
North Tampico	574,403	533,430
South Tampico	288,088	349,466
Poza Rica	2,848,294	2,520,824
Isthmus region	483,600	429,041
Total	4,194,385	3,832,761

Production by months and daily averages from January through October 1940 follow:

MONTHLY PRODUCTION

(Figures in barrels)

Month—	Total	Daily average
January	3,091,352	99,721
February	3,109,240	107,215
March	3,897,058	125,711
April	3,326,536	110,884
May	3,134,728	101,120
June	3,808,967	126,965
July	3,969,411	128,045
August	3,898,693	125,764
September	3,832,761	123,637
October	4,194,385	135,302
Total	32,263,131	.....
Average, 10 months	3,226,313	105,780

Colombia . .

Petroleum Department Issues Statistical Data for 6 Months

A STATISTICAL review on the Colombian petroleum industry for the first 6 months of 1940 has been compiled by the petroleum department, which is under the direction of Sady Gonzalez Bernal. The review was prepared for information of the Colombian Congress.

Data on concessions, production, drilling, refining and pipe-line operations are presented on a comparative basis.

Volume-Correction Policies Of Oil Buyers Unsettled

(Continued from Page 13)

ards' tables include Gulf Oil Corp., Standard Oil Co. (Indiana) and Carter Oil Co. Practically all other purchasers in Oklahoma and Kansas have reserved final decision and some of those now committed have made their policy announcements on a tentative basis.

Oklahoma and Kansas producers are accustomed to temperature-gravity corrections which will be continued under the 100 per cent tank-table policy.

An increase in the mechanical operation of computing volume from run tickets is the only important change visualized by the purchasing companies. Gagers will be required to record temperatures as in the past and some of the companies will insist upon two thermometer readings, one at the opening of the gate into the line and another at end of the run. With information on volume, temperature and percentage of contamination, clerical staffs can compute the exact volume in comparatively simple operation of modern calculators using standard tables which are now available.

Among the purchasers adopting 100 per cent tank tables for Oklahoma and Kansas February 1 are:

Tide Water Associated Oil Co., Phillips Petroleum Co., which included Arkansas; Continental Oil Co., Skelly Oil Co., Pure Oil Co., Magnolia Petroleum Co. (White Eagle Oil Corp. in Kansas), Carter Oil Co., including the Louden field, Illinois; Standard Oil Co. (Indiana), the Texas Co., Deep Rock Oil Corp., Mid-Continent Petroleum Corp.

Shell Oil Co., Inc., Globe Oil & Refining Co., Gulf Oil Corp., Cosco Oil Co., Rock Island Refining Co., Harmon-Whitehill Pipe Line Co., Kanotex Refining Co., Cities Service Co., Barnsdall Oil Co., Sinclair Prairie Oil Marketing Co., Anderson-Prichard Oil Corp., Cushing Refining Co., Ben Franklin Refining Co. and Johnson Oil Refining Co.

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New Lab Exhibits Importance Of Applied Research

(Continued from Page 11)

includes adjustable book shelves holding technical and reference works and trade publications, a conference table, moving-picture and slide-projection equipment, and a blackboard. The entrance lobby has an unusual decorative scheme, the walls portraying in colors the geologic structure of the Burbank, Tonkawa, Oklahoma City and Cushing oil fields.

Unusual provisions were made for testing certain types of apparatus. There is a vibrationproof pier in each of the north and south wings, the one in the geophysical-research department being housed in thermal insulation so that temperature can be controlled as well as isolation from vibration of the instruments under test. The piers are made of heavy concrete blocks floating on cork.

Arrangements are provided for handling heavy equipment in both departments. A large room in the production-research department has a crane for unloading trucks parked immediately outside; in the geophysical wing a truck can be driven into the room and the instruments removed or tested while they remain in the truck.

Several of the rooms intended for chemical laboratory work have very light ceilings for release of pressure in case of minor explosions. The ceiling blocks can be replaced in case they are moved by the explosion. Safety showers are installed in the hallways outside these rooms for use in case a man's clothing becomes ignited or splashed by acid or caustic.

A special room is provided in the production wing for spectrographic studies. Dark rooms are available in both wings for development of photographic film and for special optical studies. The drafting room, located in the production wing, is provided with extra lighting facilities. The entire building is equipped with special electrical wiring in addition to the 110 and 220-volt a.c. wiring systems. Alternating and direct-current generator sets provide power through the special circuits for routine and special research work.

In addition to the special equipment, the geophysical wing includes a number of combination offices and laboratories which provide each research man with the necessary space and equipment to carry on his work. There is also a special room for storing of instruments. The production wing is generally similar but includes a smaller number of combination offices and laboratories. It also has special laboratories for physical, mechanical and chemical experimentation and a room with a high ceiling for unusually tall equipment.

The instrument shop is located in the east wing of the building and occupies a rectangular space about 70 by 87 ft. In addition to the large room containing machinists' benches and shop machinery, there are four rooms for truck-body construction and welding, carpenter work, tools and raw-material storage, and clerical and supervisory offices. Some of the shop equipment is specially designed for precision work as well as for the standard shop items of lathes, grinders, milling machines, drill presses, etc. To provide for greater operating efficiency, more than the normal per-man equipment is provided. The shop provides facilities for the efficient work of a full staff of 24 machinists, tool and die makers, precision machinists, radio technicians and the supervisory and clerical personnel.

The laboratory was formally opened Tuesday of this week with a special showing for newspaper men and technical and trade-journal writers in the afternoon followed by a showing of the building to the employes of the Carter Oil Co. In the evening a special group of oil-company and service-organization technicians were shown through the building.

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Texas Oil Industry Employs Quarter Million People

DALLAS, Tex., Feb. 4.—The Texas oil industry places $747,000,000 in circulation within that state each year in the form of salaries, lease and royalty disbursements and taxes, exclusive of the gasoline levies, according to a survey recently completed by the Texas Mid-Continent Oil and Gas Association.

The industry, according to the association's report, employs 221,150 people and the total number dependent on the oil business for their livelihood is 892,900.

The industry pays out $272,005,000 annually in salaries and spends $128,256,470 with lease and royalty owners. The breakdown by districts as reported by the Texas Mid-Continent Oil and Gas Association follows:

Dist.—	Dependents on industry	Number of employes	Salaries	Disbursements to lease and royalty owners
Gulf Coast	300,000	73,704	$91,065,285	$20,953,759
E. Texas	215,000	53,822	66,081,060	29,032,636
Panhandle	62,900	15,725	19,341,750	8,532,583
S.W. Texas	160,000	39,151	47,736,865	27,367,296
W. Texas	50,000	12,890	15,914,790	27,730,427
N. Texas	75,000	18,449	22,692,270	8,309,078
W. C. Texas	30,000	7,409	9,173,070	6,330,691
Total	892,900	221,150	$272,005,000	$128,256,470

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Northern Hemisphere Offers Greater Oil Possibilities

(Continued from Page 17)

East Indies, with the exception of those of Borneo which are associated with the Andine folding.

Gulf Coast Deposits

The rich fields of coastal Louisiana and Texas lie within a regional structure which is almost unique. The sediments were derived from a continental mass to the north which had no great elevation but have been deposited to form a thickness of possibly as much as 50,000 ft. because of the subsidence of the Gulf of Mexico along with the dropping of the Caribbean branches of the Andes. Practically no other example of a wide coastal plain with such an array of wedge edges and stratigraphic traps is known. Added to this, of course, are the salt masses which have formed local structures in their rise toward the surface. The north German, Polish and Rumanian deposits may be considered to be somewhat analogous in some respects, but these deposits form a part of the foreland of a great folded chain and have become involved in the folding.

Summary

This survey of the world's potential oil resources is naturally very general but it appears as though some types of oil deposit are mainly restricted to North America; others are to be expected in the various shelf areas of the Northern Hemisphere, although not to so great an extent in the Southern Hemisphere; finally a large group found in the bordering mountain ranges are common to both hemispheres. The results of this survey are presented in Table 1.

TABLE 1—CLASSIFICATION AND DISTRIBUTION OF TYPES OF OIL FIELD

Type—	U. S. examples	Northern Hemisphere, outside of United States	Southern Hemisphere
Paleozoic flysch	Pennsylvania, eastern Kansas, eastern Oklahoma.	Possibly on Russian and West Siberian platforms.	Unknown — possibly buried beneath glacial deposits.
Paleozoic sheet reservoirs	Permian, Arbuckle, Devonian lime and Wilcox.	As above.	As above.
Mesozoic marine invasions	Wyoming and Montana, N. Louisiana, S. Arkansas, East Texas.	Produce in Siberia, probably not important in European Russia. German production.	Marginal deposits around southern continents. Argentina and Egypt.
Intermontane valleys and forelands—			
(a) Andine system	California.	Japan, Sakhalin, Borneo.	Venezuela, Colombia, Peru, Ecuador, western Argentina, Trinidad.
(b) Alpine system	None.	Baku, Rumania, Poland, small Chinese production, Iraq, Iran.	North Africa, Albania, Arabia, Bahrein, India, Sumatra, Java, Ceram.
Subsided coastal plain	Texas and Louisiana Gulf Coast.	Possibilities small.	Possibilities small.

●

On sentry duty

The Chemical Sergeant is enlisting for national defense and he is a valuable recruit The Chemical Sergeant is U. O. P. Inhibitor No. 4

Tried and proved in millions of barrels of cracked gasoline, he's in the army now—safeguarding the motor gasoline and super-octane aviation fuel stored for national defense —keeping the gum all out and the anti-knock value all in

And the sergeant won't have to give up his civilian jobs either—he can take care of it all

You don't have to be a Universal licensee to enlist the Chemical Sergeant in your service, but you ought to be because all the processes needed to make new petroleum products for national defense are available to you through Universal

And Dubbscracking

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Refinery Expansion

Construction of Indiana Plant to Start at Once

Most of the material and practically all construction details have been completed for the erection of a 5,000-bbl. refinery on 75 acres of ground along the tracks of the Big Four railway 12 miles north of Indianapolis, Ind. This is the advice given by L. B. Simmons, of Duncan, Okla., who with L. E. Winkler, of Wichita, Kans., will build the plant. Crude will be delivered by existing pipe-line systems.

Mr. Simmons is president of the Rock Island Refining Co., which now operates a 7,500-bbl. refinery at Beckett, near Duncan, Okla. Mr. Winkler is president of the Winkler-Koch Engineering Co. These men will serve as president and vice president, respectively, of the new corporation which will operate the Indianapolis refinery. The name of the new company will be Rock Island Refining Corp. As soon as materials are received on the site, construction will be started and tentative plans call for completion of the plant by the middle of August.

This summer, as the plant nears completion, L. E. Kincannon, now vice president of the Rock Island Refining Co., will move from Duncan to Indianapolis to assume management of the new corporation with Mr. Winkler. He will become vice president and secretary. All construction and purchases of material will be handled through the Winkler-Koch organization.

Grease Classification to Be Made Effective March 1

The National Lubricating Grease Institute is calling attention among its members to the classification of greases according to worked penetration which becomes effective on March 1 and after 18 months of planned delay in order to properly publicize the step. The grades follow:

Grade—	A.S.T.M. worked penetration
No. 0	355-385
No. 1	310-340
No. 2	265-295
No. 3	220-250
No. 4	175-205
No. 5	130-160
No. 6	85-115

In general the classification by worked consistency is comparable to the Society of Automotive Engineers' classification of crankcase oils by viscosity.

The need for such a classification is well indicated by the response the classification has had from both the manufacturers and from the consumers as it gives the industry for the first time something definite in the way of measuring lubricating greases.

From the standpoint of the consumer it assures uniformity of material so far as consistency is concerned and with assurance that every successive receipt of lubricating grease ordered on the classification will be uniform in consistency. At the same time the breadth of the consistency offered in this classification insures a complete line.

Likewise it has been a boon to the grease manufacturer as it assures uniformity. It has made it possible for the manufacturer to eliminate greases with nonstandard consistencies.

During the past year a large number of manufacturers have been slowly adjusting their stocks to meet this classification and at the same time, particularly among the industrial interests, specifications have been written to incorporate this classification. This also applies in the various governmental departments which are receiving bids based on this classification.

Construction Proceeding at 7,500-Bbl. Illinois Plant

ST. LOUIS, Mo.—The 7,500-bbl. refinery of Wood River Oil & Refining Co. is well under construction at Hartford, Ill., and will be completed in the near future. The plant will have a skimming capacity of 7,500 bbl., and a 2,000-bbl. Winkler-Koch cracking unit. Crude for the plant's operation will be transported by tank car and pipe line from southern Illinois fields, and shipments of refined products will be by barge, rail, and tank wagon.

The plant is being constructed by I. A. O'Shaughnessy of Globe Oil & Refining Co.; O. H. Ingram of Minneapolis, Minn., and Fred C. Koch of Winkler-Koch, Wichita, Kans., the latter two being vice presidents. F. L. Jehle is likewise a vice president, and R. E. Everitt is secretary-treasurer, with J. A. O'Neill being superintendent. Main offices of the company are located in the Union National Bank Building, Wichita, Kans.

Lion Building 200-Bbl. Poly Unit at El Dorado Plant

EL DORADO, Ark.—Lion Oil Refining Co. is constructing a 200-bbl. per day polymerization unit at its refinery here. The Lion plant has a skimming capacity of 17,000 bbl. daily and a cracking capacity of 4,000 bbl.

Texas Co. Shipments From Port Arthur Decrease in 1940

PORT ARTHUR, Tex.—Shipments of crude oil and refined products from the Texas Co.'s refinery and pipe-line terminal here in 1940 totaled 63,760,905 bbl., a decrease of approximately 5,000,000 bbl. from the 1939 loadings. Constriction of the export market accounted for most of the decline last year.

Natural Gas

Carbon-Black Plant Nearing Completion in McCampbell Field

CORPUS CHRISTI, Tex., Feb. 4.—Construction of United Carbon Co.'s new carbon-black plant near the McCampbell field, northeast of Aransas Pass, is nearing completion with the plant expected to be placed in operation in March. The plant consists of four units, which are being built at a cost of approximately $500,000. Pipe lines to transport gas from the McCampbell field to the plant already have been laid.

Files Application for Gas Franchise

Roger Lacey, of Longview, Tex., owner of the Southern Gas Co., plans to file an application with the Dallas City Council for a franchise to operate a gas-distributing system in Dallas.

Natural Gasoline

Richfield Puts New Natural-Gasoline Plant in Operation

Richfield Oil Corp. recently placed in operation its new high-pressure natural-gasoline absorption plant in the Richfield Western field, east of Elk Hills. The plant was designed by Richfield engineers, under the supervision of H. R. Linhoff, manager of Richfield's gas department, and constructed by C. F. Braun & Co., of Alhambra, Calif. Designed as a two-unit plant, each unit has a capacity of 40,000,000 cu. ft. of gas per day at 450 lb. per sq. in., with a recovery of 20,000 gal. of 22-lb. R.v.p. natural gasoline. The first unit, using one-half of its normal absorber capacity, was completed and placed in operation early in October 1940. An additional absorber is now being installed to complete the first unit which will then have a capacity of 40,000,000 cu. ft. per day.

Among features are a special direct-fired oil heater; combination high-pressure and low-pressure distillation circuit; a novel absorption-oil reclaimer unit; and an oil-heated stabilizer reboiler. Liberal use is made of gas-engine-driven pumping units for cooling tower water, engine jacket water, high-pressure lean oil and fire protection. Gas engines are also used for instrument air and engine-starting compressor services.

All the venting operations are conducted at pressures of from 175 to 300 lb. per sq. in., thereby permitting the vent gas from fat-oil vent tank and the noncondensed vapors from the high-pressure and low-pressure strippers to be recompressed in a single stage of compression from 175 lb. to 450 lb. per sq. in. for reabsorption. This, and the use of a direct-fired heater and gas engine, has resulted in a considerable saving in compressor capacity as well as an excellent overall saving in plant fuel.

The plant is entirely automatic in operation and requires very little operating attention. Safety and emergency controls are found throughout the plant.

All gas processed enters the plant at absorber pressure. This is accomplished by compressing the low-pressure gas and tank vapors to a pressure equal to the normal pressure on the high-pressure gas-gathering system by means of automatic booster compressors installed at the various trap farms throughout the field. This eliminates the necessity for more than one gas-gathering system.

News of Pipe-Line Activity, which was formerly found on this page, will be found on Page 57.

Recycling News

Butane Towers Being Installed At Hunt's Long Lake Plant

Fractionating towers, heaters, pumps, and other necessary equipment for separation of normal isobutane are being installed at Hunt Oil Co.'s recycling plant in the Long Lake field, Anderson County, Texas.

The facilities will be available for operation about March 15. Included are storage tanks, two fractionating towers, exchangers, reboilers, pumps, and miscellaneous equipment.

When construction is completed the Hunt plant will be qualified to manufacture vapor-pressure gasoline, normal butane, isobutane, kerosene, and propane.

Authority Granted to Unitize South Jennings for Recycling

NEW ORLEANS, La., Feb. 4.—Authorization to unitize separately owned tracts in the South Jennings field, Jefferson Davis Parish, has been granted by B. A. Hardey, conservation commissioner, which clears the way for construction of the $500,000 recycling plant there.

Under the authorized plan, Stanolind Oil & Gas Co. would bear the entire expense of construction and operation of the recycling plant and royalty owners would receive full share of distillate recovered by the process.

The unitization plan would affect only gas rights in the 2,000-acre field where producing gas-distillate wells have been brought in at three levels, 8,600 ft., 8,800 ft., and 9,500 ft.

Present plans call for recycling gas only to the 8,600-ft. zone but production of gas would be continued from the three horizons. The plan sets up an allocation of the percentage of gas and distillate to the royalty owners.

From the five producing wells in the South Jennings field an average of 6,000,000 cu. ft. of gas is being sold daily. There will be no interruption of the commercial-gas withdrawals but production will be increased to 30,000,000 or 35,000,000 cu. ft. and the difference returned to the sand in the recycling operation.

PROGRAMS AND MEETINGS

A.P.I. Southwestern Division Announces Program of February Meeting

The oil industry in Shreveport, La., and the officers and members of the Ark-La-Tex chapter of the American Petroleum Institute, have completed arrangements for the annual spring meeting of the Southwestern district in Shreveport, February 27-28, in the Washington-Youree Hotel.

Two full days of meetings will be held, at which papers covering a wide range of subjects related to the production of oil and gas will be presented and discussed. The program committee now has under consideration the following subjects:

"Analysis of Distillate Recovery Plants." It is proposed to discuss the procedure that is used to determine the feasibility of distillate plant installations, methods of unitization, determination of plant size and type; in other words, the practical methods and the information that must be obtained before a distillate plant is erected.

"Testing of Gas to Determine Feasibility of a Recycling Plant." It is proposed to discuss methods of testing gas wells to determine the content and products that might be obtained through a recycling plant. Field tests, laboratory tests, and how to use the results of these tests for the determination of the most efficient type of plant to be erected are expected to be included.

"Selection of Sucker Rods." It is proposed to discuss the selection of rod size, etc., as well as the energy requirements for pumping oil wells, and the possibility of considerable more fluid being lifted than is being done at the present time.

"Electrical Process for Treating Paraffin in Oil Wells." A system is to be described by means of which electrical heating has been used successfully in over 100 wells in the Texas Panhandle fields.

"New Theory of Squeeze Cementing." Will cover dehydration of cement in squeeze cementing.

"A Preliminary Survey of the Heaving-Shale Problem." It is proposed to review the findings of operators who have studied this problem and report on the laboratory research work on the subject conducted at a large educational institution.

"Prevention of Corrosion of Steel Pipe Lines by Oil-Well Brines." It is proposed to describe tests made in the field with sodium silicate to prevent corrosion in steel pipe lines.

In addition to the foregoing, the program committee is negotiating for an eminent public official and two well-known executives from the producing branch who will discuss general problems and policies affecting the oil industry.

A preliminary program containing titles of the papers and authors together with complete information on the entertainment will be issued shortly.

N.G.A.A. Breaks Precedent in Holding Annual Meeting Outside Tulsa

For the first time in 20 years, the National Gasoline Association of America will hold its annual convention in a city other than Tulsa, as its 1941 meeting is scheduled to be held this spring in Dallas, Tex., April 23-25. Formerly, the association held midyear meetings in Dallas and Fort Worth.

Technical sessions will be of wide interest with the presentation of conclusions reached by research committees of the association in studies of test methods for both natural and liquefied petroleum gases. Broad discussions of production and measurement problems of high-pressure gas and recycling operations and potential byproducts of natural-gasoline plants will also be program features.

Members of the convention program committee are George P. Bunn, Phillips Petroleum Co., Bartlesville, Okla.; H. H. Beeson, Sabine Valley Gasoline Co., Inc., Shreveport, La.; George E. Edgett, Carter Oil Co., Tulsa; H. A. Ellis, Cities Service Oil Co., Bartlesville, Okla.; F. E. Fisher, Skelly Oil Co., Pawhuska, Okla.; R. D. Gibbs, Union Oil Co. of California, Los Angeles, and Allen T. Givens, Coltexo Corp., Monroe, La.

J. R. Jarvis, Lone Star Gasoline Co., Dallas, N.G.A.A. vice president, is chairman of the local arrangements committee and he will be assisted by John B. Atkins, Parade Gasoline Co., Shreveport, and A. M. Brackett, Roeser & Pendleton, Inc., Fort Worth, Tex.

Symposium on Wetting Agents Scheduled for This Month

A meeting of the American Section of the Society of Chemical Industry, jointly with the American Institute of Chemical Engineers, will be held on Friday, February 28, at 8 p.m. at the Chemists Club, 52 East Forty-first Street, New York. The meeting is to be a symposium on wetting agents. Dr. Lincoln T. Work will preside.

The topics to be discussed are as follows:

"The Theory of Wetting Agents," Prof. F. E. Bartell, professor of chemistry, University of Michigan.

"The Structure of Wetting Agent Molecules," C. R. Caryl, of the American Cyanamid Co.

"Uses of Wetting Agents," Dr. Samuel Lenher, technical manager of the fine chemicals division, E. I. du Pont de Nemours & Co.

A dinner will be held at the club prior to the meeting and starting at 6:45 p.m. Ladies and nonmembers of the cooperating societies are invited to attend both the dinner and the meeting.

CALENDAR OF EVENTS

February

WISCONSIN PETROLEUM ASSOCIATION, annual convention, Milwaukee, Wis., February 11-13.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Engineering Societies Building and Commodore Hotel, New York, N. Y., February 17-20.

KENTUCKY PETROLEUM MARKETERS ASSOCIATION, fifteenth annual meeting and convention, Brown Hotel, Louisville, Ky., February 18-19.

NORTH TEXAS OIL AND GAS ASSOCIATION, Wichita Falls, Tex., February 22.

LIQUEFIED PETROLEUM GAS ASSOCIATION, INC., annual convention, Chicago, February 24-25.

AMERICAN PETROLEUM INSTITUTE, southwestern district regular spring meeting, Washington-Youree Hotel, Shreveport, La., February 27-28.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, Hotel Mayflower, Washington, D. C., March 3-7.

OHIO PETROLEUM MARKETERS ASSOCIATION, Deshler-Wallick Hotel, Columbus, Ohio, March 4-6.

PACIFIC COAST GAS ASSOCIATION, annual spring sales conference, sales and advertising section, San Francisco, Calif., March 6-7.

NATIONAL DIXIE DISTRIBUTORS, INC., Fort Worth, Tex., March 10.

AMERICAN PETROLEUM INSTITUTE, Pacific Coast District, Division of Production, regular spring meeting, Biltmore Hotel, Los Angeles, Calif., March 11.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, spring convention and refiners' and suppliers' exhibit, Hotel Severin, Indianapolis, Ind., March 11-13.

SOCIETY OF AUTOMOTIVE ENGINEERS, national aeronautics meeting, Washington Hotel, Washington, D. C., March 12-14.

OKLAHOMA UTILITIES ASSOCIATION, annual meeting, Tulsa, March 17-18.

OIL BURNER INSTITUTE'S NATIONAL OIL BURNER PROGRESS EXHIBITION, Commercial Museum, Philadelphia, Pa., March 17-22.

MID-CONTINENT CHAPTER, AMERICAN PETROLEUM INSTITUTE, spring convention, Amarillo, Tex., March 21-22.

OIL TRADES ASSOCIATION OF NEW YORK, annual meeting, Waldorf-Astoria Hotel, New York, March 25.

PACIFIC COAST GAS ASSOCIATION, annual spring technical conference, technical session, Los Angeles, Calif., March 27-28.

April

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-sixth annual meeting, Rice Hotel, Houston, Tex., April 2, 3, and 4.

AMERICAN CHEMICAL SOCIETY, St. Louis, Mo., April 7-11.

MIDWEST POWER CONFERENCE, fourth annual meeting, Palmer House, Chicago, April 9-10.

SOUTHWESTERN GAS MEASUREMENT SHORT COURSE, College of Engineering, Oklahoma University, Norman, Okla., April 15-17.

WESTERN PETROLEUM REFINERS ASSOCIATION, annual meeting, Arlington Hotel, Hot Springs, Ark., April 16-18.

AMERICAN PETROLEUM INSTITUTE, eastern district, Division of Production, regular spring meeting, William Penn Hotel, Pittsburgh, Pa., April 17-18.

NATURAL GASOLINE ASSOCIATION OF AMERICA—Annual convention, Baker Hotel, Dallas, Tex., April 23-25.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Mayo Hotel, Tulsa, April 23-25.

NATIONAL PETROLEUM ASSOCIATION, semi-annual meeting, Hotel Cleveland, Cleveland, Ohio, April 24-25.

May

PETROLEUM AND NATURAL GAS CONFERENCE, State College, Pa., May 2-3.

AMERICAN GAS ASSOCIATION, Natural Gas Section, Dallas, Tex., May 5-8.

WEST TEXAS GEOLOGICAL SOCIETY, annual spring field trip, starting at Fort Worth and ending at Midland, May 10-11.

SOCIETY OF AUTOMOTIVE ENGINEERS, national production meeting, Schroeder Hotel, Milwaukee, Wis., May 12-13.

AMERICAN PETROLEUM INSTITUTE, eleventh midyear meeting, Mayo Hotel, Tulsa, May 19-23.

NATIONAL OIL SCOUTS AND LAND MEN'S ASSOCIATION, annual convention, Dallas, Tex., May 29-31.

June

SOCIETY OF AUTOMOTIVE ENGINEERS, summer meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., June 1-6.

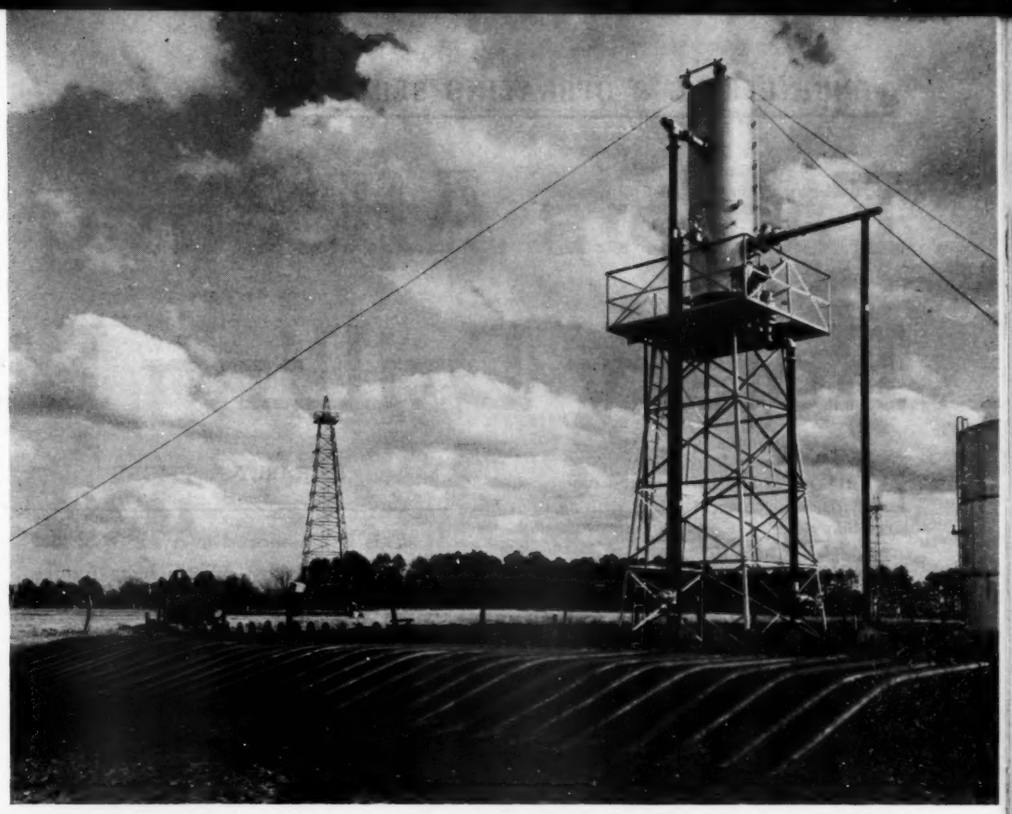
Inside Stuff

ABOUT THE CAMERON FLEX-SEAL MUD VALVE
that minimizes mud valve maintenance!

Split bonnet, held together by two alloy steel bolts; facilitates renewing stem packer.
Gate stem reveals extent of wear on resilient flow-way insert when valve is in closed position.
Lip-type stem packer requires no packing gland.
Heat treated alloy steel gate shown in closed position embedded in the resilient flow-way insert. In open position, it is retracted completely out of the flow-way.
Renewable resilient flow-way insert which absorbs cutting action of abrasive-laden fluid and which may be replaced in the field, quickly and at low cost. Note how the resilient insert provides a pressure-tight seat for the gate and seals the two-piece valve body.
Replaceable alloy steel wear ring which protects the hub ends against cutting.
Forged steel body in two pieces to facilitate changing the flow-way insert.
Hubs with any type of end connection desired are interchangeable and are attached to the body by interlocking shoulders and grooves. Loosen the body bolts and the hubs will swivel like a union when making up in a manifold.

BE "*dollarwise*" — CAMERON-IZE!

CAMERON IRON WORKS, INC. • 1330 POLK STREET • HOUSTON, TEXAS



Instead of having a separate tank battery for each well, many operators use a centrally located installation and connect all wells into it through a manifold. Where production is curtailed, the wells can be produced alternately. The tank battery is equipped with two separators and a double manifold, thus allowing wells to be produced without interruption while an individual production test is taken on a particular well

ENGINEERING & OPERATION

In This Section

FEBRUARY 6, 1941

Factors Affecting Wear of Rotary Drilling Lines

By HARRY F. SIMONS

This is the second in a series of four articles on rotary drilling lines by the author. In this installment the factors affecting the service of a wire rope and the principal points of wear are discussed.

The drum and sheave size, the position of the crown block, the contour of the grooves in the sheaves and the lubrication of the rope affect the amount of service. Wear on the line is concentrated at the drum and the fast sheaves on the crown and traveling block when the elevators are at the three different points where they are most commonly loaded.

Subsequent installments discussing installation and maintenance of rotary drilling lines will appear in the near future. The first installment in the series, dealing with the selection of wire rope for rotary drilling lines, appeared in the January 23, 1941, issue.

DURING the past 10 years the footage drilled with one change of rotary drilling lines has more than doubled due to the improvement in the quality of the wire rope, increase in the rate of penetration and weight carried on the bit, better designed and more appropriate drum and sheave sizes, and a wider knowledge of the proper installation and care of this particular piece of machinery.

Manufacturers are responsible for the better-quality wire rope obtainable today as they have met the demands of the drilling industry and the efforts of their competitors with a constantly improving product. Educational campaigns in an effort to increase the footage of each drilling line and to eliminate as many as possible of the unwarranted complaints, have aided the drilling organizations in reducing wire-line costs. Drilling contractors and departments have sought every means to reduce the expense due to the frequent replacement of this item and to insure against the breaking of the wire rope while it is in use. Great attention is being given to factors which will result in more satisfactory service.

As the rate of penetration and the footage drilled per bit have increased, the work placed on the wire rope has been reduced. Most of the wear on the drilling line takes place during the making of a trip and a reduction in the number of trips required per well will greatly increase the life of the line. The decrease in the time required to drill each particular section reduces the time the rope is subjected to the drilling load.

The drilling line is loaded when the blocks and pipe are in the above position each time a stand of pipe is added. Excessive strain and wear occur simultaneously at the drum and fast sheaves on the block

That the line receives considerable wear while drilling is in progress is evident if a close watch is kept on the traveling and crown blocks. The sheaves in the blocks and the drilling line are never still but are practically in constant motion. The amount of the movement is small, the sheaves gently rocking back and forth. However, each movement is accompanied by a change in the loading point of the line. The wear caused by an individual movement is very small but in view of the changes while a well is being drilled, the effect is considerable. This has never been studied quantitatively and is only brought out to show that all of the wear in the line does not occur while making a trip.

Where a Line Wears

There are several points where the wear on the line in the derrick and through the blocks is concentrated. Wear on the drum will be discussed later. The first of these is at the drum when the traveling block is (*a*) as close to the floor as it gets while pulling or running in drill pipe; (*b*) as close to the crown block as it gets while making a trip; (*c*) about 40 ft. off the floor, the position it is in when breaking out or adding a joint of pipe. The second main point of wear is at the crown block when the traveling block is in each of the three positions listed above. A third is at the fast sheave on the traveling block in each of the same positions.

As pointed out in a previous article (The Oil and Gas Journal, Jan. 23, 1941, p. 42), the strain on the line is not equal in all parts of the system and is greatest on the fast line. The acceleration and deceleration of the line is greatest when the traveling block is at the above points and it is here that the line is loaded the heaviest. There are also points of lesser wear where the lines contact the sheaves of both blocks when the traveling block is in each of the above positions.

The points of wear can be readily observed by marking the respective position of the line and then spooling it on the drum. Generally it is only necessary to examine the portions of the line near the drum and near the fast sheave to determine the condition of the line, as these are the points of greatest wear. If these portions of the line are still in good condition there is no danger, provided the line has not been accidentally damaged by kinking, flattening, cutting or stranding. However, an occasional complete examination of the drilling line will do no harm and may uncover some unexpected point of wear or failure.

That the wear is greatest at the points listed has long been recognized by rotary drillers and the obvious remedy is to change the position of the drilling line to provide a new portion at these points. It is thus possible to distribute the wear over the entire rope instead of relatively small parts and the life of the line can be increased until practically the whole line has only 75 per cent of its strength remaining and must be replaced. Failure to change the position of the line will result in one section of it becoming so worn that the entire line will have to be discarded. Rotary drilling lines are seldom spliced.

Factors Affecting the Wear on Wire Rope

In addition to the load carried by the line there are many factors which affect wear on the line and often cause it to be discarded before it has given anything like the expected amount of wear. Some of these factors have to do with the equipment with which the line is used, some with the manner in which it is installed and some with its method of operation and handling while in service.

Drum and Sheaves

The diameter and grooves of the sheaves and the diameter of the drum have a great effect on the satisfactory performance of the line. If any of the sheaves or the drum has a small diameter, both the bending stresses and the radial pressures will be excessive and will cause rapid wearing of the rope. The minimum recommended diameter for sheaves and drum, as pointed out before, is 30 times the wire-rope diameter and the average recommended is 45 times the wire-rope diameter for 6 by 19 construction rope and equipment. For heavy loads such as those on a drilling rig, 72 times the rope diameter would reduce the fatiguing considerably and 90 times might practically eliminate fatiguing.

The size of the sheaves and drum on a drilling rig are strictly limited and there has been no way discovered of reaching the more ideal condition, particularly where large-diameter wire rope

(1¼-in.) is used. The ideal rope-sheave-diameter relation can be approached for smaller size lines and an additional investment in larger sheave blocks might be justified in view of the increased rope service obtained. The same is true of larger drums on hoists used for shallow drilling. A preformed line, because of its freedom from torsional stress, will withstand more bending over sheaves of critical diameter. On some rigs it is impossible to install sheaves of the proper diameter and the additional investment in a more flexible line is justified.

There are several formulas for calculating bending stresses in wire rope giving results that vary widely.[1] The exact bending stresses in a wire rope are not definitely known. As the wire rope passes over the sheave there is not only a relative movement of the individual strands but also of the individual wire. The distance between the crowns of the strands will be increased on the outside of the bend and decreased on the inside of the bend. The amount of the increase and decrease will be dependent on the size of the sheave.

Thorough rope lubrication reduces the coefficient of friction between adjacent wires. It also prevents disintegration of the core which would allow the load-carrying strands to pull down into very close contact and restrict both the movement of the adjacent wires and of the strands. The smaller sheaves and drums not only cause an increase in the curvature of the wires but cause greater wire movement and eliminate some of the lubrication from the wire line. The restriction of the movement of the individual wires sets up an abrasive force which causes the line to wear rapidly.

The diameter of the sheaves and drum also determine the load which can be placed on the wire rope as it affects the radial pressure of the rope on the sheave or drum. The radial pressure on a sheave is independent of the arc of contact but is dependent upon the tension in the rope and the radius of curvature of the groove in the sheave and is expressed by the formula $P = T/R$, where P = the radial pressure, T = the pull on the rope and R = the radius of curvature.[2]

To obtain the unit radial pressures it is only necessary to divide by the diameter of the wire rope. It is readily seen that as the sheave diameter decreases the radial pressures become excessively high and result in crushing of the line on the sheave or drum.

Contour of Grooves

It is essential that the sheave grooves be of sufficient diameter to provide and maintain proper rope clearance and support if the maximum of service is to be obtained from a wire line. The sheave should support the wire rope and still have enough clearance to permit normal rotation of the rope.

If the sheave groove is too large, insufficient support of the wire rope will permit it to be flattened, or distorted from its true circular section, and the fatigue will be increased and the rope weakened. If the groove is too small, the rope will be pinched and abraded on the sides of the groove and will be prevented from its normal turning. The wedging action will tend to unbalance the rope, cause a distortion of the center and wire nicking at the points of contact, resulting in premature breaking of the wires in the valleys between the strands.

Use of grooves too large for the particular size wire rope is due to inattention but the sheaves may develop small grooves through natural wear. As the line becomes smaller with use, it cuts into the sheave with the result that a new rope will often be too large for the groove and will not be supported properly. The groove in the sheave gets smaller, not larger, with use. Since the introduction of manganese steel sheaves, the trouble from this source has diminished although it cannot be disregarded altogether.

While this discussion is concerned primarily with wire rope, it might be well to point out that proper fitting of the line to the sheave also reduces sheave replacement and repair costs.

If the metal in the sheave is too soft, subjected to excessive loads, or used a long time without inspection and repair, it will develop ridges in the bottom of the groove which correspond to the crowns of the strands of the wire rope. No new rope has the same stranding pattern as a used rope. When a new rope is run over a sheave having ridges in the groove, the wires in the strands are cut. A preformed rope, with less tendency to twist, eliminates some of the wear of the sheave and line.

The influence of the sheaves on the service obtained from a wire rope cannot be overestimated.[3] In some cases, wire ropes have failed on drilling rigs after a use of only a few days, the failure being due entirely to improper conditions in the sheaves. Checking the grooves in the crown and traveling-block sheaves each time the rig is torn down is a simple and easy matter and will indicate when the sheaves need repairing. For drilling lines (1 to 1⅛-in. size) the sheaves should have a clearance of 3/64 in. or more; for 1¼-in. lines, the clearance should be $\frac{1}{16}$ in. or more.

Position of Crown Block

The fast-line sheave should be in line with the center of the drum on which the wire line is wound if the rope is to spool properly. The fleet angle is the angle between the center line of this sheave and the rope as it winds on and off the drum. The fleet angle is divided into right and left, the base line on the drum being exactly in line with the groove in the fast-line sheave. If this angle becomes greater than 1½° the rope may spool loosely or crowd itself and jump back over the preceding layer. A large fleet angle will also cause the rope to rub on the side of the sheave and cause abrasion of the line.

There is little danger of the fleet angle[4] becoming excessive on a rotary rig except in cases where the hoist and the crown block are completely out of line. However, skidding the crown block to one side in order to line up the blocks with the hole will cause one fleet angle to exceed the other and the line to spool evenly and easily in one direction but not in the other. Keeping the crown block in the center of the water table is not always possible but it should be located there unless it is absolutely necessary to move it.

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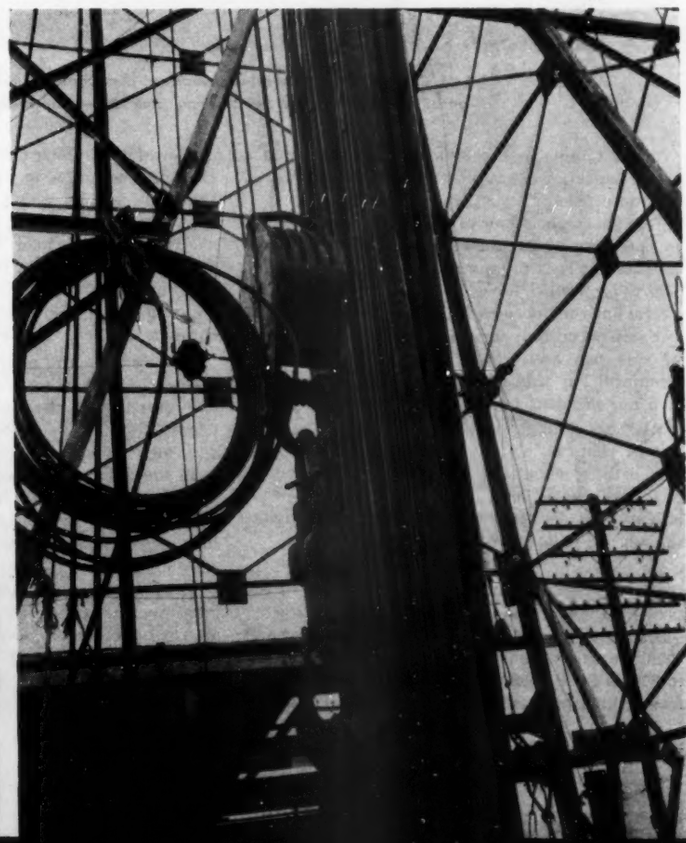
1. Wire Engineering.
2. Vol. 1, No. 3, Roebling Wire Rope.
3. Drillers Wire Rope Handbook.
4. Drilling Equipment Directory.

Left: One of the severest points of wear on a rotary drilling line occurs at the drum and the traveling and crown-block fast sheaves as the pipe is picked up. Right: Extra wire line is coiled and hung on the derrick; note grooves in traveling-block guard caused by rubbing of wire line



Diesels Used in Pennsylvania Repressuring Project

By A. C. MacINTYRE

THE first diesel-power installation used in secondary-recovery operations was recently placed in use in the middle district of the Pennsylvania fields, where since the early days gas has been generally used. The diesels are being used to permit conservation of natural gas for injection into the sands, where otherwise it would be used as fuel for power.

The installation consists of two 12 by 15-in., 68-hp. diesels short-belted to two 4 by 9½ by 10-in. compressors having a capacity of 350,000 cu. ft. daily. It is being operated by the J. P. Eaton Corp. on its Lanning farm in Eldred Township, Warren County, where the company has undertaken an intensive repressuring development on a 59-acre tract.

Gas shortage is one of the principal handicaps in operating in the old Pennsylvania fields today. Most of the rock pressure has been dissipated and many properties have been under vacuum for years, but they do nevertheless show considerable per-acre saturation for oil left in the sand. Much of this has been recovered by water drive at Bradford, but this method has not proved effective nor efficient in the middle district.

At the Lanning project the operators have patterned about 50 acres by using all the old wells and drilling about 15 new producers. About 12 new wells have been drilled for gas-input wells and additional wells are being drilled to complete the 50-acre pattern.

Development of the property was started in the early eighties and has been continued to the present time when the present owners started secondary methods. It produces from the first and third Venango sands at depths ranging from 400 to 800 ft. Sand thicknesses vary from 30 to 60 ft., from which production ran as high as 120 bbl. a day in the early days. It has always been considered one of the best properties in the Titusville district.

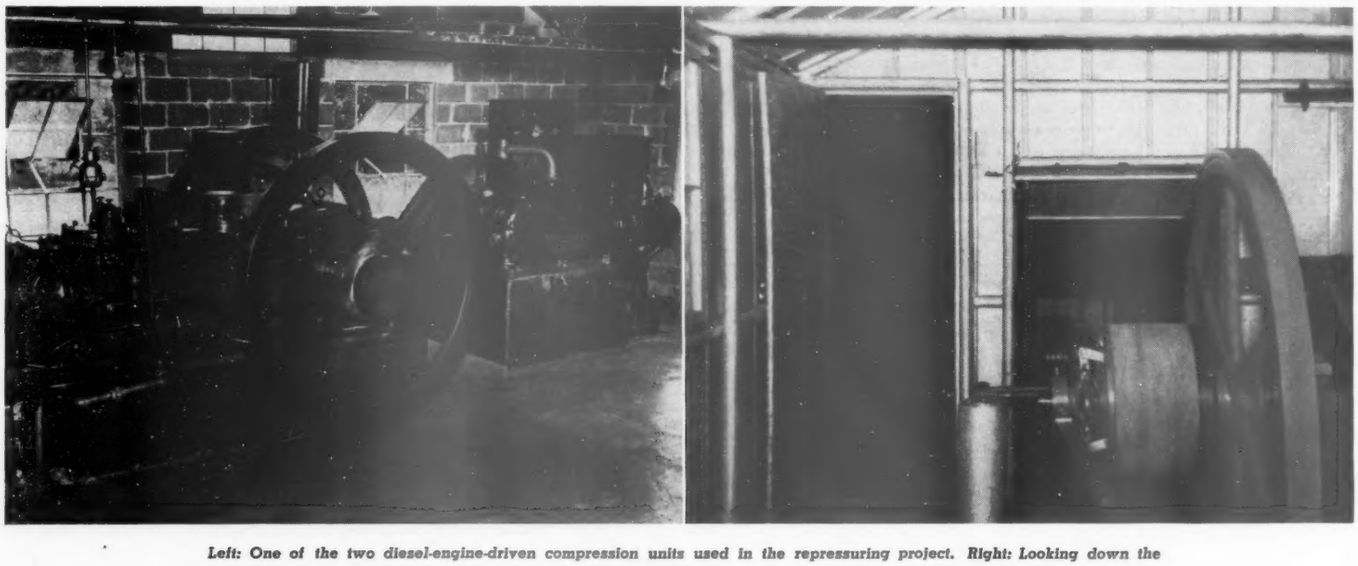
The plant has a number of unique features—a highly efficient cooling system, underground condensers and several special devices to aid in checking costs, fuel consumption and gas injection. The cooling system consists of wooden shelves over a 100-bbl. tank, enclosed by vertical slats staggered on the inside and outside of the frame. L. R. Johnson, superintendent for the corporation, says he experiences more trouble in keeping the units to the required temperature than he does in keeping them running cool. Temperature adjustment is made by the removal of shelves from the cooler. Heat exchangers are used in the system and rain water only is run through the engines and compressors for cooling. The water in the cooling device cools the rain water through the heat exchangers.

Missing from the plant is the familiar stand of pipe coils for cooling the gas between the stages and after leaving the high-stage side. Fluid is condensed from each compressor in 200-ft. lengths of 6-in. pipe buried underground and conforming with the uphill slope, with the end farthest from the plant several feet higher than the building end. Fluid is condensed in these lines, drained into drips and the gasoline blown into the storage tanks.

Automatic thermostatic shutdown controls, meters for measuring fuel consumption and volumetric injection of gas into the sand are other features of interest. The diesels also furnish power for the generators, used chiefly for lighting about the plant.

Gas repressuring has been under way for about 8 months, with the sand now taking gas at pressures varying from 75 to 300 lb. All input wells are packed off into two to four input strata and the injected gas is metered weekly into each stratum. The injection is intermittent rather than steady, usually at 24 to 48-hour intervals.

Considerable effort is being made to increase gas production on the property. At the beginning of the operation it was only 35,000 cu. ft. a day in excess of the amount required to run the powers. Now, a very large increase has been built up for injection into the sand.



Left: One of the two diesel-engine-driven compression units used in the repressuring project. Right: Looking down the tunnel which covers the belt running from the engine to the power. Note the use of pipe framework for the building

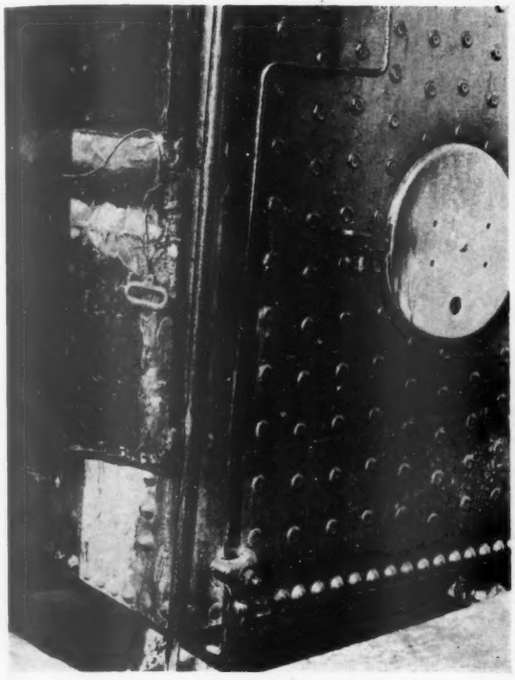
For removing gypsum from the old wells dynamite shooting is used by the company. The dynamite is fastened to two ordinary bamboo fishing poles tied together and lowered into the wells. They are exploded by an ordinary oil-well squib. About 125 lb. of dynamite produces an explosion of sufficient force to recrack the sand wall and clear the hole. The shots are placed by company employes and cost about $30 each.

Triple-Acting Diesel Engine Lowers Weight-Power Ratio

DETROIT, Mich., Feb. 4.—A new type of diesel engine, triple-acting, has been developed and patented which utilizes two pistons within a single cylinder.

The cylinders are arranged in opposing positions. The pistons move together forming a central combustion chamber until compression ignites the fuel, throwing the pistons away from each other. The outward drive in turn compresses a pair of chambers at the ends of the cylinder, causing development there of another power impulse.

Operating Ideas



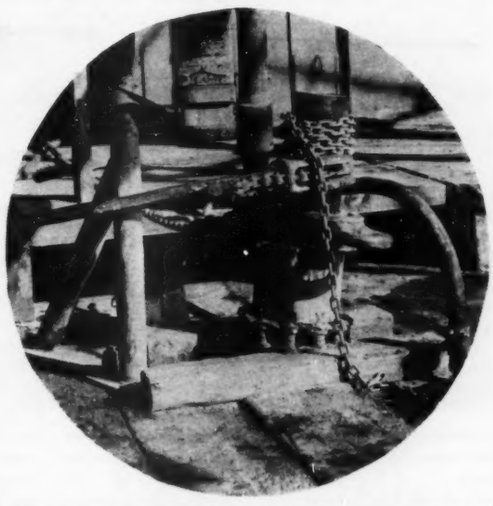
Tie for Gage Blowdown Line

If left free, the end of the line below the blowdown valve on the boiler gage-glass column is apt to whip violently as the column is blown clear, frequently snapping the nipple off short. Occasionally the stresses set up by vibration are so severe as to fracture gage-glass connections, and the boiler must be taken out of service for repairs to be made. One drilling company leads the blowdown line through the crowfoot on the hand-hole plate, the crowfoot fitting closely over the pipe and holding it snugly against the boiler shell, preventing vibration.

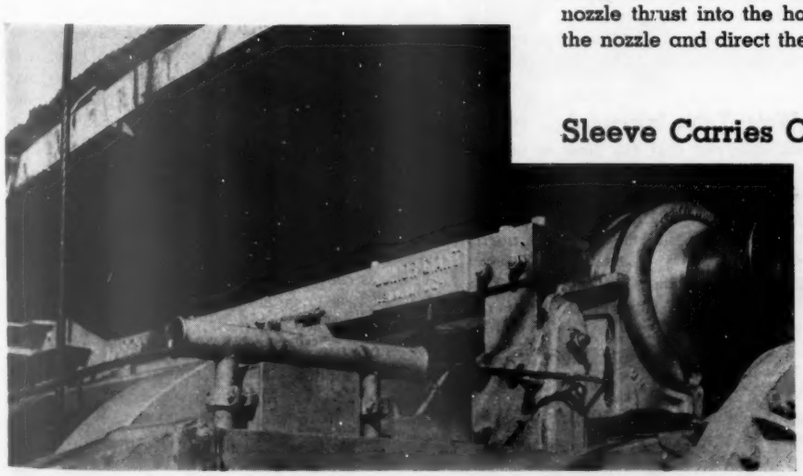
Platform Facilitates Servicing Engines

At a repressuring project in the middle district of the Pennsylvania fields, one operator constructed the platform shown in the accompanying photograph to aid in servicing of two gas-engine-driven compressors. Made from used pipe, the platform serves the dual purpose of providing a raised walkway between the engines and protecting the electric motor seen below it. When work is to be done on the motor, the platform is easily removed.

Fixed Backup Post for Auxiliary Rathole



A sturdy pipe bracket, bolted to the derrick floor, provides support for the chain tongs used to back up the joint of pipe in the auxiliary rathole while making it up on the kelly. Use of the post removes from the derrick floor the usual backup line, and thus clears the footing for other work. The washdown hose on this rig is kept adjacent to the auxiliary rathole, with the nozzle thrust into the half of a 2-in. union. This thimble or ferrule serves to hold the nozzle and direct the stream of fluid into the cellar until nozzle is removed.



Sleeve Carries Catline Over Chain Guard

Slapping of the catline on the tongs is prevented by carrying the wire line through a pipe sleeve mounted on two short pedestals atop the chain guard. By flaring the ends of this pipe sleeve, wear on the catline is minimized and the lubricant applied to the line is not scraped off. The guard is set at such a height that there is no pull exerted against it by the line when tonging pipe, it being intended solely to suppress sidewise or vertical whip as the stress on the line is alternated in jerking a joint of pipe tight, or breaking it out.

Field Men Seek Origin of Oil Spring at El Dorado, Kansas

By PAUL REED

EARLY in January 1940 several major pipe-line companies operating in the vicinity of El Dorado, Kans., checked their operations carefully in an effort to determine whether oil seeping from a fresh-water spring close to a creek at a point 1¼ miles south of the city limits of El Dorado might be the result of a pipe-line leak. The investigations disclosed no evidence that a pipe-line break was the cause of this flow of oil, which had started at the rate of over 100 bbl. per day and which has continued at a lesser rate at irregular intervals throughout the year. Even though pipe-line engineers recognize that the seep is not connected with their operations, they continue to observe it with interest. It has been suggested that an account of what occurred be published for the information of pipe-line men in other areas. At the point where oil comes to the surface more than 2,000 bbl. had been recovered in 11 months; in addition to this a considerable amount has been destroyed by fire and lost by flowing down the creek.

Right: Oil spring (indicated by arrow) in creek bank and equipment for recovering oil. Below: Sink hole with show of oil on hill northwest of oil seep at spring in creek bank.

Until the first of January 1940 the spring where the oil appeared had flowed only good fresh water which furnished a dependable supply for cattle which were wintered in the surrounding pasture. On January 1, 1940, oil first appeared at the spring flowing at the rate of about 100 bbl. per day; this was a sufficient quantity to cover the creek. The oil was ignited and burned for 11 days before it was finally extinguished with equipment brought in by an oil company operating in the area. After this, the opening in the bluff at the spring was enlarged by blasting, the creek was dammed and equipment was installed for removing oil from the creek. This equipment, which continues to operate on the location, consists of a 2-in. line from the creek to a platform above the high-water level, on which is installed a small reciprocating pump driven by a gasoline engine which pumps the oil to a battery of tanks on level ground above the banks of the creek. From these tanks oil is loaded into a 15-bbl. tank truck for delivery to a purchaser.

For several weeks after the first flow of oil was observed at the spring, the gravity of the oil was 36° A.P.I. Since then the gravity has declined steadily. In May it was 32°; since September it has been 27°. At the beginning of the year the oil sold for 90 cents per barrel; at the end of the year it sold for 80 cents per barrel; before settling in the tanks the oil contained 10 per cent bottom sediment. Deliveries of oil recovered from the spring have been as follows: In January approximately 400 bbl. were sold as the result of little more than 2 weeks' operations; approximate sales for the following months were: February, 300 bbl.; March, 200 bbl.; April, 480 bbl.; May, 240 bbl.; June, 135 bbl.; July, 75 bbl.; August, 75 bbl.; September, 45 bbl.; October, 15 bbl.; and November, 75 bbl.

Water Table Influential

It has been observed that the flow of oil has been largest when the water table is falling after a period of high water. It has been noticed that a rainy period precedes an increase in the flow of oil. At a sink hole which is 2¼ miles northwest of the spring a scum of oil has been observed on oil rising during periods of high water. This sink hole is located on golf links and is of a type characteristic in limestone areas. At two springs, one of which is ¼ mile up the creek while the other is a mile south of the oil spring, there have been slight shows of oil during the past year.

In seeking an explanation of the flow of oil, it was first believed that oil was coming from a pipe-line break, but careful examination of pipe-line records as well as of the lines laid in the vicinity showed that the oil had not come from these sources. It has been pointed out that the oil might come through the limestone from sink holes located at points where large amounts of oil were stored in pits during the years immediately following the development more than 20 years ago of the El Dorado field, which is about 3 miles northwest. It has been believed that there is also a possibility that the oil may be coming from plugged wells located in the Sluss pool, 2½ miles east, and elsewhere in the vicinity.

In explanation of the phenomenon observed, W. V. Howard, field editor of The Oil and Gas Journal, comments as follows:

"The region around El Dorado is a 'karst' area, or one which is underlain by limestone which is honeycombed by channels and caverns of various sizes. Where the surface has been eroded down to these caverns, a sink hole is formed. During periods of drought, the water table in such a region tends to fall below the level of some of the streams and water from these streams flows into the ground. During a period of rainfall, the water level rises and the flow is reversed until the streams have carried off the excess water and the water table falls again.

"If oil enters such a system, the chances are that it will seep slowly along channels and may collect in fairly large quantities in caverns. During dry periods, when the water is at level *A* in Fig. 1, a considerable quantity of this oil may collect. During a rainy period the water table will rise to *B* because the amount of water entering the system is greater than the discharge capacity of the streams. While the level is rising, the oil is carried past the outlet and most of the fluid discharged will be water which underlies the oil. However, as the water level recedes, there will come a time when the oil sinks to the level of the streams, at which time it will be discharged in a large slug.

"In such a system, the channels connected with any one outlet may extend for many miles. It is entirely possible that the sink hole on the golf course is a part of the same system as that which feeds the spring. The point of entry of the oil may be several miles away in a well with parted

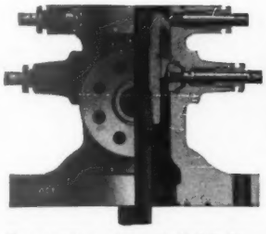
(Continued on Page 45)

O-C-T 6000-lb. test Christmas Tree on the first commercial producer in the State of Mississippi.

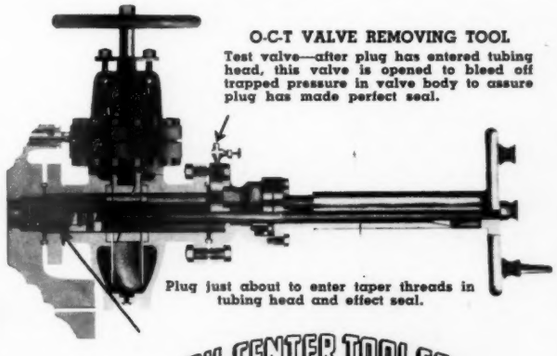
Numerous important discovery wells, including the first commercial producer in the State of Mississippi, have been completed through O-C-T Christmas Trees . . . a significant tribute to O-C-T leadership in the field of completion equipment.

The O-C-T Type T-26 Tubing Head, shown on the Christmas Tree above, in cross-section below, and in a drilling-in hook-up at lower right, has figured prominently in the completion of many of the deepest and highest pressure wells in the Gulf Coast and Mid-Continent. This O-C-T Tubing Head is particularly advantageous inasmuch as *it may be used with either screwed or flanged blowout preventer equipment (see illustration lower right).* The retractable hanger seats permit lowering the hanger below the point of suspension should the completion method require this feature.

Write for full particulars on this and the complete line of O-C-T well heads.



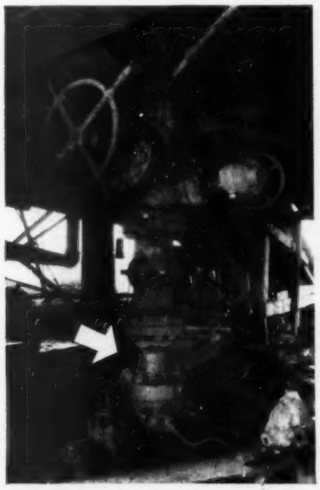
Cross-section view of O-C-T Type T-26 Tubing Head showing hanger seated on retractable seat. The flanged outlets in this head are threaded to receive a valve removing plug.



O-C-T VALVE REMOVING TOOL

Test valve—after plug has entered tubing head, this valve is opened to bleed off trapped pressure in valve body to assure plug has made perfect seal.

Plug just about to enter taper threads in tubing head and effect seal.



Above: Note casing nipple installed between master gate and O-C-T Type T-26 Tubing Head. Tubing hanger will pass through this threaded connection to seat in Tubing Head.

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O-C-T MANUFACTURES A COMPLETE LINE OF CONTROL EQUIPMENT FOR DRILLING AND PRODUCING WELLS

WELL LOGS and FIELD DATA . . . . of Active Oil Areas

Southern Mississippi

(Compiled by The Oil and Gas Journal)

LOCATION: Southern Mississippi comprises that part of the state lying to the east and southeast of the city of Vicksburg.

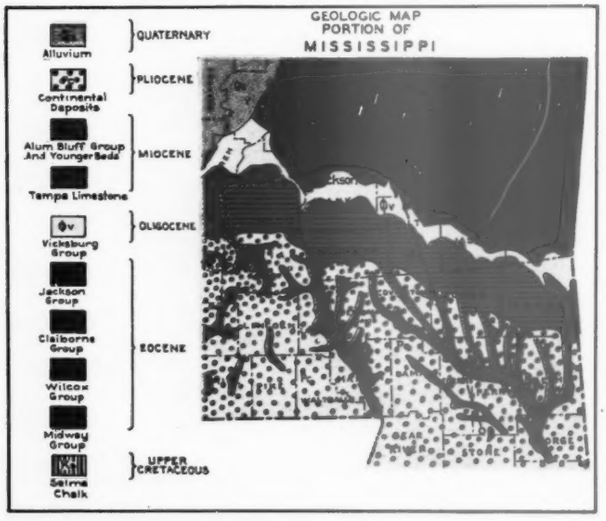
COMMUNICATIONS: The main line of Illinois Central between Chicago and New Orleans traverses the western part of the region from north to south and is roughly paralleled by the Gulf, Mobile & Northern in the eastern part of the area. Other lines converge from the north on Jackson, the capital of the state, and diverge again toward the south. The principal east-west lines are the Alabama and Vicksburg, which passes through Jackson, and the Mississippi Central which connects with western roads at Natchez and with the Gulf, Mobile & Northern at Hattiesburg.

There are relatively few paved highways in the area, the only through roads without unpaved stretches being three north-south roads through Vicksburg, Jackson and Hattiesburg, respectively, a northwest-southeast highway passing through Jackson and Hattiesburg, and an east-west highway from Vicksburg to Meridian.

TOPOGRAPHY: The region is low-lying and gently rolling with ridges marking the outcrop of some of the more resistant formations. Much of the surface is clayey making drainage poor and transportation difficult during wet weather.

DEVELOPMENT: Prior to the discovery of the Tinsley field in 1939, the only production in the state was from the Jackson and Amory gas fields. There has been a great deal of wildcatting done, with 96 wildcat completions during 1940. The only fields discovered so far are the Tinsley and Pickens fields. Tinsley produces from five sands in the Selma, Eutaw and Tuscaloosa formations of Upper Cretaceous age. These sands have been given the local names of Woodruff, Stevens, Perry, Lammons and Powell. Of these, the Woodruff is at present the only one of major importance. Production at Pickens comes from the Wilburn sand of Eutaw age.

GEOLOGY: Structurally, the area is divided into three main sectors, based upon the dominant type of structure. The principal structural trend in the state is a continuation of the Cincinnati-Nashville geanticline which follows a zig-zag course from the Great Lakes to the Gulf. In Mississippi, this trend enters the state in the northeast corner and contains as a major feature the Jackson uplift which is structurally very similar to the Sabine uplift of northwestern Louisiana. The Tinsley dome is an uplift on the northeast flank of this major structure.



Crossing the southern part of the state from east to west is a series of flexures of which the Hatchetigbee anticline is the principal example. Between this zone and the major structure described above is the Warrior basin which is located principally in Alabama.

Flanking the east-west trend on the south and overlapping its western end is a coastal plain belt in which the presence of numerous salt domes has been demonstrated.

The structural similarity between Mississippi and Louisiana is not duplicated by a corresponding similarity in sedimentation. Separating the two areas is the Mississippi embayment which extended as far north as Cairo, Ill., during the Cretaceous and Eocene. This embayment has been filled to a great depth by Tertiary and Recent alluvial sediments. On the flanks of this embayment, the sediments were derived from different areas so that their lithologic similarity is based upon a similarity of conditions in the uplands. The results is that formations cannot be correlated directly across the embayment, with the exception of limestones such as the Vicksburg.

In general, the history of southern Mississippi and Louisiana is the same. A platform of folded Paleozoic rocks subsided slowly and irregularly and on this platform were deposited great wedge-shaped masses of sediments. Oscillations in the subsiding area gave rise to a number of unconformities and wedge-edges, together with lenticular deposits of sand. Where these deposits are locally uplifted, they may contain oil.

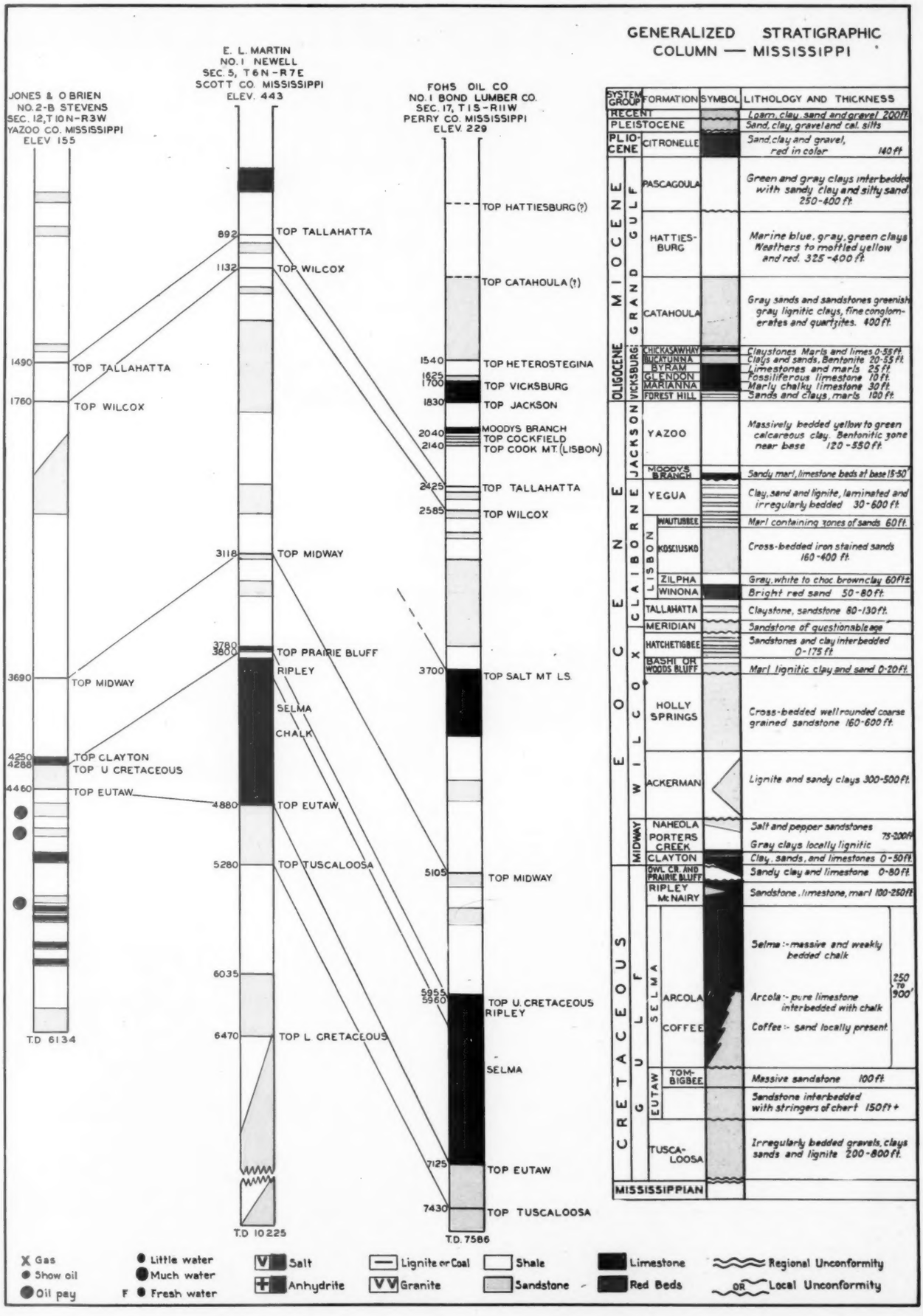
POTENTIALITIES: The record of nearly 150 wildcats with only two fields is not an impressive one. However, it has been definitely ascertained that many of the tests were badly located with regard to structure and also that they were not drilled sufficiently deep. Lacking definite information to the contrary, no test should be regarded as complete until the full thickness of the Tuscaloosa has been penetrated. E. L. Martin (now Gulf) 1 Newell penetrated nearly 4,000 ft. of Lower Cretaceous sands and shales and this formation may also give encouraging shows where it pinches out to the north.

South of the Yazoo County fields, the Eocene-Wilcox would appear to have as good possibilities as it has farther to the west, although not necessarily in the same part of the section. Drilling around the salt domes has not met with success up to the present time.

Geophysical prospecting has not yielded as good results as in other parts of the country. This is largely due to the fact that not enough is known of the subsurface geology of Mississippi to make interpretation possible.

The Paleozoic rocks of Mississippi are known to be asphaltic on outcrop, particularly in the Mississippian section. This leads to the possibility that these rocks will yield commercial oil at depth. The Amory gas field was formerly productive from the Hartselle sandstone (Mississippian). It is unlikely, however, that prospecting will be carried down to the Paleozoic in southern or south central Mississippi for some years owing to the great depths involved.

Reserves at Tinsley are estimated at 37,000,000 bbl. or 8,250 bbl. per acre, mostly from the Woodruff sand.


GENERALIZED STRATIGRAPHIC COLUMN — MISSISSIPPI
JONES & O BRIEN NO. 2-B STEVENS SEC. 12, T 10 N-R 3 W YAZOO CO. MISSISSIPPI ELEV 155
E. L. MARTIN NO. 1 NEWELL SEC. 5, T 6 N-R 7 E SCOTT CO. MISSISSIPPI ELEV. 443
FOHS OIL CO NO. 1 BOND LUMBER CO. SEC. 17, T 1 S-R 11 W PERRY CO. MISSISSIPPI ELEV. 229
1490 TOP TALLAHATTA
1760 TOP WILCOX
3690 TOP MIDWAY
4250 TOP CLAYTON
4288 TOP U CRETACEOUS
4460 TOP EUTAW
T.D 6134
892 TOP TALLAHATTA
1132 TOP WILCOX
3118 TOP MIDWAY
3780 TOP PRAIRIE BLUFF
3800 RIPLEY
SELMA
CHALK
4880 TOP EUTAW
5280 TOP TUSCALOOSA
6035
6470 TOP L. CRETACEOUS
T.D 10225
TOP HATTIESBURG (?)
TOP CATAHOULA (?)
1540 TOP HETEROSTEGINA
1625
1700 TOP VICKSBURG
1830 TOP JACKSON
2040 MOODYS BRANCH
TOP COCKFIELD
2140 TOP COOK MT. (LISBON)
2425 TOP TALLAHATTA
2585 TOP WILCOX
3700 TOP SALT MT LS.
5105 TOP MIDWAY
5955
5980 TOP U. CRETACEOUS
RIPLEY
SELMA
7125 TOP EUTAW
7430 TOP TUSCALOOSA
T.D. 7586
SYSTEM GROUP
FORMATION
SYMBOL
LITHOLOGY AND THICKNESS
RECENT
Loam, clay, sand and gravel 200ft
PLEISTOCENE
Sand, clay, gravel and cal. silts
PLIOCENE
CITRONELLE
Sand, clay and gravel, red in color 140 ft.
MIOCENE
GULF
PASCAGOULA
Green and gray clays interbedded with sandy clay and silty sand 250-400 ft.
HATTIESBURG
Marine blue, gray, green clays Weathers to mottled yellow and red. 325-400 ft.
CATAHOULA
Gray sands and sandstones greenish gray lignitic clays, fine conglomerates and quartzites. 400 ft.
OLIGOCENE
VICKSBURG
CHICKASAWHAY
Claystones Marls and limes 0-55 ft.
BUCKATUNNA
Clays and sands, Bentonite 20-55 ft.
BYRAM
Limestones and marls 25 ft.
GLENDON
Fossiliferous limestone 10 ft.
MARIANNA
Marly chalky limestone 30 ft.
FOREST HILL
Sands and clays, marls 100 ft.
EOCENE
JACKSON
YAZOO
Massively bedded yellow to green calcareous clay. Bentonitic zone near base 120-550 ft.
MOODYS BRANCH
Sandy marl, limestone beds at base 15-50'
CLAIBORNE
YEGUA
Clay, sand and lignite, laminated and irregularly bedded 30-600 ft.
LISBON
WAUTUBBEE
Marl containing zones of sands 60 ft.
KOSCIUSKO
Cross-bedded iron stained sands 160-400 ft.
ZILPHA
Gray, white to choc. brown clay 60 ft ±
WINONA
Bright red sand 50-80 ft.
TALLAHATTA
Claystone, sandstone 80-130 ft.
WILCOX
MERIDIAN
Sandstone of questionable age
HATCHETIGBEE
Sandstones and clay interbedded 0-175 ft.
BASHI OR WOODS BLUFF
Marl lignitic clay and sand 0-20 ft.
HOLLY SPRINGS
Cross-bedded well rounded coarse grained sandstone 160-600 ft.
ACKERMAN
Lignite and sandy clays 300-500 ft.
MIDWAY
NAHEOLA
Salt and pepper sandstones
PORTERS CREEK
Gray clays locally lignitic 75-200 ft.
CLAYTON
Clay, sands, and limestones 0-50 ft.
CRETACEOUS
GULF
SWL. CK. AND PRAIRIE BLUFF
Sandy clay and limestone 0-80 ft.
RIPLEY Mc NAIRY
Sandstone, limestone, marl 100-250 ft.
SELMA
ARCOLA
Selma :- massive and weakly bedded chalk
Arcola :- pure limestone interbedded with chalk
COFFEE
Coffee :- sand locally present
250 TO 900'
EUTAW
TOMBIGBEE
Massive sandstone 100 ft.
Sandstone interbedded with stringers of chert 150 ft +
TUSCALOOSA
Irregularly bedded gravels, clays sands and lignite 200-800 ft.
MISSISSIPPIAN
X Gas
Show oil
Oil pay
Little water
Much water
F Fresh water
Salt
Anhydrite
Lignite or Coal
Granite
Shale
Sandstone
Limestone
Red Beds
Regional Unconformity
OR Local Unconformity

Why the
REED VALVE
WILL
EASILY OPERATE
AND
DEPENDABLY SEAT UNDER ALL CONDITIONS OF SERVICE, PRESSURE AND TEMPERATURE.

The Reed Valve is opened or closed by a single operation . . . a quarter turn of the valve stem.

1. **In the closed position, the seating discs are HELD AGAINST THEIR SEATS BY PRESSURE.**
2. **A few degrees of rotation of the stem LIFTS THE SEALING DISCS FROM THEIR SEATS.**

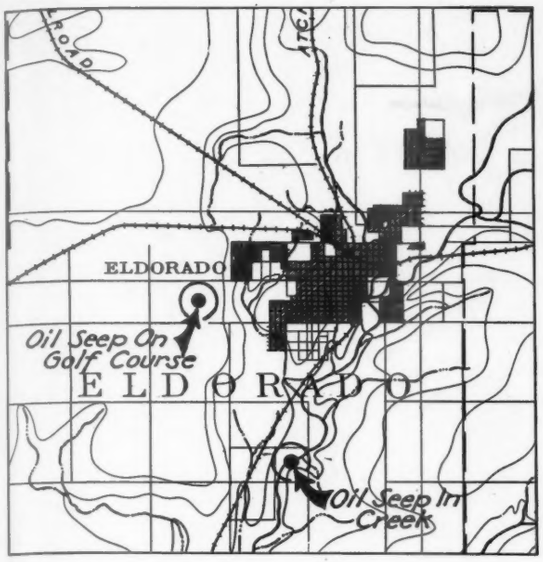
   This permits partial equalization of pressure on both sides of the disc and further rotation of the stem carries the discs to the open position with only slight frictional resistance.
3. **In its open position, the REED VALVE provides a smooth flow of fluid guided by the conduit through the disc holder.**

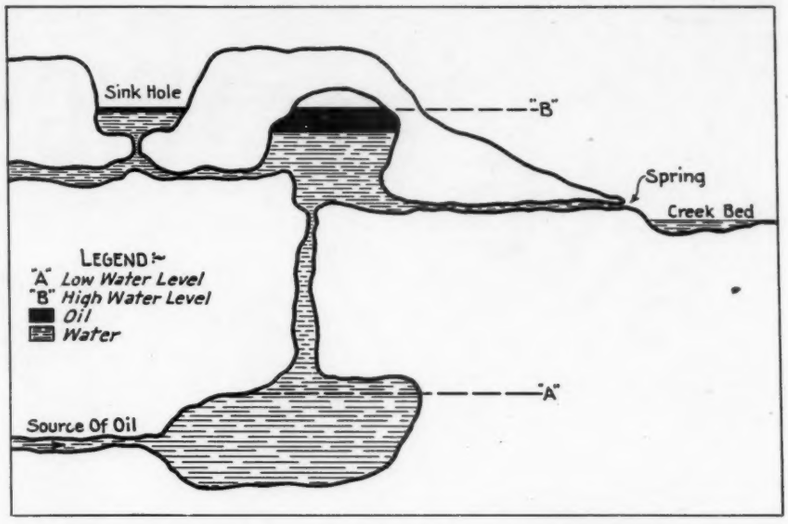
Reed Valves are manufactured for temperature ranges from 100 degrees F. (minus) to 1000 degrees F. (plus), in all standard pressure ratings for use in a wide range of piping services.

For further information, address the VALVE DIVISION.

The Reed Valve design is basically that of the double disc gate valve which, in the past, has built an enviable reputation through years of service, and is a marked improvement over the design of that type valve.

The Reed principle of design combines to protect the seats during opening and closing of the valve and assure superior performance through ease of operation in a wide range of services and temperatures.





Left: Map showing location of oil seeps near El Dorado, Kans. Above: Diagrammatic sketch showing relationship between oil seeps and water table in area underlain by cavernous limestone

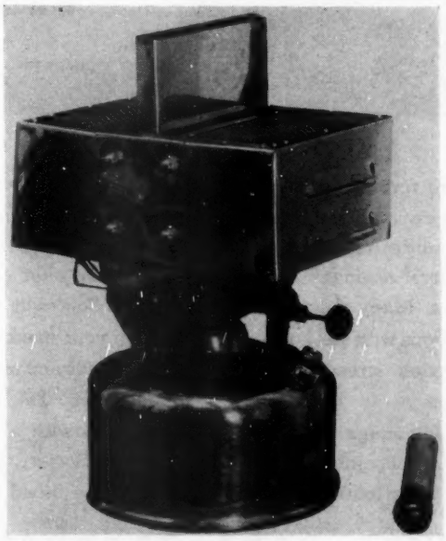
or damaged casing. The sudden appearance of oil a year ago may be found to coincide with acidization of one or more wells, with a leak in casing which has developed as a result of corrosion or accident. It does not seem likely that it is associated with any activity that took place more than a few weeks or months before oil appeared on the spring.

"The drop in gravity of the oil, particularly during periods of low water, conforms to the results of experiments carried on by W. W. Love and the writer some years ago. During the course of these experiments, it was found that oil in contact with limestone is fractionated to some extent by absorption of lighter oils by the limestone itself. This would take place under stable low-water conditions more easily than during periods of flow caused by recent rains. Also during the periods of stagnation, some evaporation would take place with a consequent drop in gravity. A third cause would be reaction between more highly mineralized water and the oil during periods of lessened or no flow. Limestone and associated materials are soluble in water, but it takes considerable time to obtain a saturated solution. It has been found that a sulfate solution tends to emulsify oil and reduce its gravity. The solubility of sulfates is small and it is doubtful whether water running through a system of channels in limestone would pick up much sulfate. Water standing for weeks or months in such a system would probably contain a much higher concentration of these reactive salts in solution."

Oil Burner Energizes Electrical Radio

A SIMPLE little oil or gas flame may supply the energy to operate your radio. To describe briefly how electric current can be generated by the heat of a burner, reference is made to the fundamental facts which have been turned to useful account in the device pictured in Fig. 1. Then, in Fig. 2, the principle is revealed. Here is shown a single thermocouple formed from the negative element *A* and the positive element *B*. The two elements are welded together at *C* which forms the hot junction of the couple. When the wires 1 and 2, soldered to the two ends of the thermocouple, are connected with the terminals of the electric instrument *D* (which may either be a millivoltmeter or an ammeter) and the couple is heated at *C* by the burner *E* an electric current is produced. This passes from *A* over the hot junction *C* to *B* and thence to the electric meter *D* and back again to the element *A*, as indicated. When heated as illustrated, the thermocouple acquires a higher temperature at *C* than on its two extremities, which establishes an electric potential and a flow of current.

In the unit shown in Fig. 1 a plurality of thermocouples are connected in series, and each thermocouple is provided with a cooling fin to effect the highest possible difference of temperature between the hot and the cold junctions of the couples. The voltage as well as the flow of current produced is under otherwise equal conditions directly proportional to the difference of temperature between the junctions of the couples. The thermocouples are formed from patented metal alloys which produce a far greater voltage and current flow than has so far been obtained with other thermocouples, a fact which has made the thermocouple unit possible and practical.



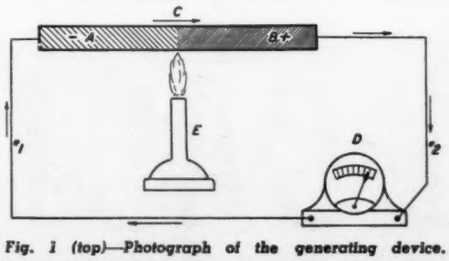


Fig. 1 (top)—Photograph of the generating device. Fig. 2, at bottom, illustrates the principle of operation.

The unit illustrated here has been specifically adapted to actuate radio receivers in rural districts where commercial current is not available. It is operated by the heat of a burner consuming lamp and stove fuel. It is, of course, obvious that it also can be operated by the heat produced by a small gas burner adapted for natural or liquefied gas.

The device delivers all of the electrical energy required to actuate any modern farm radio set in about 30 seconds. The patented thermocouple elements are not subject to oxidation at the temperatures to which they are exposed in use at the required voltage. No deterioration of the metals in the thermocouples could be observed at the conclusion of an 8,000-hour test period.

The operating expense of the unit is only a small fraction of 1 cent per hour. The unit is ready to produce the needed current to obtain reception with farm radio receivers adapted for its use, and besides reducing the operating cost of the receiver it also effectively eliminates the well-known objectionable features arising from dry-cell operation.

From a business point of view the unit described above has unusual merit as there are millions of homes in the United States and Canada which are not wired for commercial current consumption, and many more millions of such homes are located in Latin America, Mexico, Central and South America. In days gone by, oil companies did a profitable business furnishing kerosene for lamps, and this business can be duplicated under more favorable conditions by the oil companies which furnish liquefied gas and other suitable petroleum fuels. This device with radio receiver will be marketed in Tulsa.

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MODERNIZE YOUR PRODUCT WITH

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Bolivian Crude Oil Low in Sulfur

By W. E. LEMEN, GUSTAV EGLOFF, and G. B. ZIMMERMAN
Universal Oil Products Co. Research Laboratories, Chicago, Ill.

THERE are three main oil-producing areas in Bolivia. The one having the most development is a sub-Andean zone located on the eastern ranges of the Andes extending from Peru and Lake Titicaca southeasterly to Santa Cruz. Standard Oil Co. of Bolivia* (1935) is the only producing company in Bolivia, and their development has centered in this area. The oil from seepages in this country has been used since Colonial times.

The second oil zone in Bolivia is 13,000 ft. above sea level. Due to volcanic activity which has obscured many of the surface marks of oil-producing strata, no development has occurred. However, there have been oil seepages which have indicated the presence of producing horizons.

In the third area, there are no surface oil indications. The presence of Silurian and Devonian limestones of the Paleozoic era have shown evidences of oil-bearing strata. Albertite, a polymerized petroleum product, has also been found.

Refining Characteristics

An evaluation of the refining characteristics of two Bolivian crudes, Sanandita and Camiri, was made based on the production of gasoline, kerosene, gas oil and a minimum of fuel oil. These crudes are light paraffinic oils, low in sulfur and free of salt. Camiri crude is particularly light and shows a gasoline content of 65.1 per cent at 392° F. Additional properties of these oils are shown in Table 1.

TABLE 1—PROPERTIES OF BOLIVIAN CRUDES

Producing field:	Sanandita	Camiri
Gravity, °A.P.I.	41.7	54.7
Sp. gr. at 60° F. (15.6° C.)	.8170	.7599
Sulfur, per cent	0.07	0.02
Salt as sodium chloride, lb./1,000 bbl.	None	None

100-cc. distillation:	°F.	°C.	°F.	°C.
I.B.P.	116	47	110	43
5 per cent	180	82	142	61
10	218	103	174	79
20	282	139	202	94
30	351	177	250	121
40	442	228	286	141
50	518	270	328	164
60	586	308	387	197
70	658	348	448	231
80	724	384	518	270
90	752	400	648	342
E.P.	755	402	720	382
Per cent over	98.5		98.5	
Per cent bottoms and coke by wt.	1.2		1.5	
Per cent at 400° F. (204° C.)	35.5		63.0	
Per cent at 572° F. (300° C.)	57.5		85.0	

Each of the crudes was fractionated by a series of distillations through a 10-in. laboratory Hempel column to produce 248° F. (120° C.), 302° F. (150° C.) and 392° F. (200° C.) end-point gasolines, a 248°-392° F. (120°-200° C.) naphtha fraction, a kerosene fraction having a maximum end point of 545° F. (285° C.) and a 680° F. (360° C.) end-point gas oil. The yields and properties of the distillate fractions as well as the crude bottoms from Sanandita crude are tabulated in Table 2 and the corresponding data for Camiri crude are given in Table 3.

Sanandita crude produced 37.2 per cent of 392° F. end-point gasoline, with an octane number of 50, 12.0 per cent kerosene of good properties and

*Reyes, Petroleum Times 33, 362 (1935).

TABLE 2—LABORATORY FRACTIONATION OF SANANDITA CRUDE

Fractionation No.:	1	2	3	4	5
Yields, volume per cent of crude:					
248° F.E.P. gasoline	16.5	....	....	16.5	....
302° F.E.P. gasoline	....	25.6	....	....	....
392° F.E.P. gasoline	....	....	37.2	....	37.2
Naphtha	....	....	....	20.7	....
Kerosene	....	....	....	12.0	12.0
Gas oil	....	....	....	....	24.9
Topped crude	83.2	74.1	62.5	....	....
Reduced crude	....	....	....	50.5	....
Crude residue	....	....	....	....	25.6
Recovery	99.7	99.7	99.7	99.7	99.7
Loss	0.3	0.3	0.3	0.3	0.3
Yields, weight per cent of crude:					
248° F.E.P. gasoline	13.7	....	....	13.7	....
302° F.E.P. gasoline	....	22.2	....	....	....
392° F.E.P. gasoline	....	....	33.3	....	33.3
Naphtha	....	....	....	19.5	....
Kerosene	....	....	....	12.0	12.0
Gas oil	....	....	....	....	26.0
Topped crude	85.9	77.5	66.4	....	....
Reduced crude	....	....	....	54.4	....
Crude residue	....	....	....	....	28.4
Recovery	99.6	99.7	99.7	99.6	99.7
Loss	.04	0.3	0.3	0.4	0.3

Properties of distillates:	Gasolines			Naphtha
Gravity, °A.P.I.	76.5	68.8	62.1	52.5
Specific gravity at 60° F. (15.6° C.)	.6803	.7064	.7309	.7690
Total sulfur, per cent	0.02	0.02	0.03	0.03
Mercaptan sulfur, per cent	0.009	0.018	0.018	0.026
Octane number, C.F.R. motor	67.5	59.5	50	36
Vapor pressure, Reid, lb./sq. in.	15.8	....	....	....
Characterization factor	12.55	12.28	12.14	11.90

100-cc. distillation:	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.
I.B.P.	80	27	93	34	96	36	244	118
5 per cent	100	38	119	48	130	54	260	127
10	110	43	135	57	150	66	265	129
30	142	61	173	78	208	98	282	139
50	167	75	202	94	248	120	302	150
70	191	88	228	109	290	143	328	164
90	224	107	262	128	343	173	366	186
E.P.	248	120	302	150	392	200	396	202
Per cent over	96.0		98.0		98.0		99.0	
Per cent bottoms	1.0		1.0		1.0		1.0	
Per cent loss	3.0		1.0		1.0		....	

Properties of intermediate fractions:	Kerosene		Gas oil	
Gravity, °A.P.I.	41.2		34.8	
Specific gravity at 60° F. (15.6° C.)	.8193		.8509	
Sulfur, per cent	0.03		0.05	
Color, deg. Saybolt	21		....	
Color, N.P.A.	....		1½	
Viscosity, S.U. at 100° F. (37.8° C.), sec.	32.1		42.9	
Kinematic viscosity at 100° F., cts.	1.88		5.18	
Viscosity, Saybolt Thermo at 75° F.	380		....	
Viscosity, Saybolt Thermo at 60° F.	400		....	
	°F.	°C.	°F.	°C.
Flash, Tag closed	155	68	....	....
Flash, Pensky-Martens closed	....	....	270	132
Cold test	....	....	35	1.7
Characterization factor	11.81		11.92	

100-cc. distillation:	°F.	°C.	°F.	°C.
I.B.P.	406	208	515	268
10 per cent	422	217	540	282
30	434	223	561	294
50	444	229	585	307
70	458	237	614	323
90	489	254	653	345
E.P.	530	277	682	361
Per cent over	99.0		98.5	
Per cent bottoms and coke by weight	1.0		1.5	

Properties of bottoms:	Topped crudes			Reduced crude	Crude residue
Fraction removed:	Gasolines			Kerosene	Gas oil
Gravity, °A.P.I.	36.4	34.1	31.7	29.5	24.7
Specific gravity at 60° F. (15.6° C.)	.8428	.8545	.8670	.8789	.9059
Sulfur, per cent	....	....	0.08	0.11	0.13
B.s. and w., per cent	....	....	0.2	0.3	0.3
Viscosity, S.U. at 100° F. (37.8° C.), sec.	41.4	49.1	64.5	102	....
Viscosity, S.U. at 210° F. (99° C.), sec.	....	....	....	....	65
Kinematic viscosity at 100° F., cts.	4.73	7.12	11.5	21.0	....
Kinematic viscosity at 210° F., cts.	....	....	....	....	11.8
	°F. °C.	°F. °C.	°F. °C.	°F. °C.	°F. °C.
Flash, Pensky-Martens closed	....	....	220 104	290 143	440 227
Cold test	....	....	45 7.2	70 21	95 35
Characterization factor	12.00	12.02	12.02	12.01	12.08

100-cc. distillation:	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.
I.B.P.	257	125	330	166	438	226	530	277	675	357
10 per cent	327	164	390	199	487	253	569	298	712	378
30	453	234	499	259	558	292	620	327	732	389
50	572	300	598	314	642	339	686	363	740	393
70	690	366	700	371	721	383	734	390	748	398
90	754	401	741	394	756	402	....	....	....	....
E.P.	760+	404+	743	395	760+	404+	760+	404+	760+	404+
Per cent over	98.5		98.0		98.0		97.5		95.0	
Per cent coke by weight	1.4		1.9		2.1		2.3		5.0	
Per cent at 400° F. (204° C.)	22.4		12.0		....		....		....	
Per cent at 572° F. (300° C.)	50.0		45.5		33.5		11.5		....	

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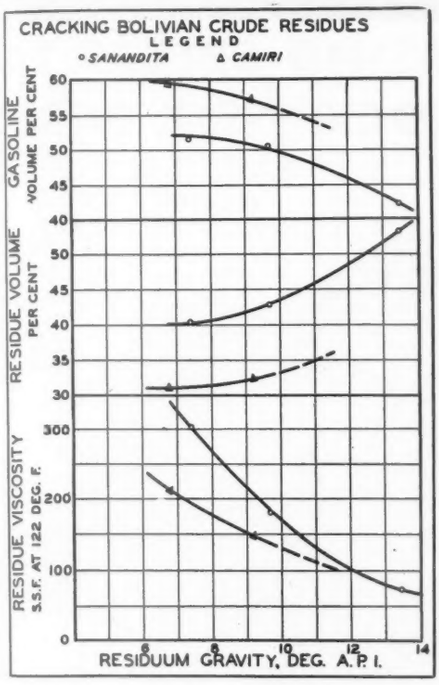
24.9 per cent gas oil with a 35° F. (2° C.) cold test. The residue remaining after removal of the gas oil has a specific gravity of 0.9059 (24.7° A.P.I.), a 95° F. (35° C.) cold test and a characterization factor indicating a high proportion of paraffinic hydrocarbons. The sulfur content of all fractions is low. Reduction of the gasoline end point to 248° R. (120° C.) increases its octane rating to 67.5 leaving a naphtha of 36-octane number. These results indicate that it is not possible to meet present requirements for aviation-base gasoline with light gasoline from Sanandita crude.

Camiri crude as anticipated by the inspection in Table 1 produced an exceptionally high yield of 392° F. end-point gasoline, 65.1 per cent. This gasoline had an octane rating of 45. The kerosene, similar to that from the Sanandita crude, represented 16.4 per cent of the crude and the gas oil 11.7 per cent. The 28.2° A.P.I. gravity (0.8860 sp. gr.) residue represented only 6.4 per cent of the original crude, but was similar to the residue from Sanandita crude in other respects The 248° F. end-point gasoline from this oil had an octane number of 66 and indicates that aviation-base gasoline of high octane value may not be made by single fractionation of Camiri crude.



Both the Sanandita and Camiri crudes were fractionated in semicommercial scale equipment to remove the fractions boiling up to 400° F. (204° C.) in continuous operation and higher boiling fractions in batch-operation steam distillation. The yields and properties of the crude residues thus produced are shown in Table 4. Slight differences in properties of these residues in comparison with those produced in laboratory fractionation are due to differences in degree of fractionation obtainable between laboratory and semicommercial equipment.

Checking Crude-Oil Residues

The crude residues from semicommercial fractionation were subjected to cracking tests in a Dubbs two-coil pilot plant to evaluate them as cracking stocks. These tests were conducted to produce gasoline of 392° to 400° F. (200° to 204° C.) end-point gasoline and residuums of various viscosities to establish a relationship between gasoline yield and residuum viscosity. Table 5 presents the results of these tests and the gasoline yield-residue viscosity correlation is given graphically in the accompanying curves. These results show gasoline yields up to 51.3 per cent from Sanandita topped crude and up to 59.2 per cent from Camiri topped crude with cracked residuum viscosities in the range of 73 to 303 seconds Furol at 122° F. The gasoline octane numbers were 65 to 65.5, respectively.

In addition to the gasoline and residuum, the gas produced in cracking is a valuable product, particularly because the olefins it contains are raw material for polymer gasoline and isooctane. Representative gases were therefore analyzed by combined low-temperature fractionation and chemical absorption with the results shown in Table 6. From these analyses and the analyses of the gases dissolved in the gasoline as shown in Table 5, it can be predicted that by debutanization of the gasoline

(Continued on Page 53)

TABLE 3—LABORATORY FRACTIONATION OF CAMIRI CRUDE

Fractionation No.:	1	2	3	4	5
Yields, volume per cent of crude:					
248° F.E.P. gasoline	31.8	....	....	31.8	....
302° F.E.P. gasoline	....	45.3	....	....	....
392° F.E.P. gasoline	....	....	65.1	....	65.1
Naphtha	....	....	....	33.3	....
Kerosene	....	....	....	16.4	16.4
Gas oil	....	....	....	....	11.7
Topped crude	67.7	54.1	34.5	....	....
Reduced crude	....	....	....	18.1	....
Crude residue	....	....	....	....	6.4
Recovery	99.5	99.4	99.6	99.6	99.6
Loss	0.5	0.6	0.4	0.4	0.4
Yields, weight per cent of crude:					
248° F.E.P. gasoline	28.4	....	....	28.4	....
302° F.E.P. gasoline	....	41.6	....	....	....
392° F.E.P. gasoline	....	....	61.6	....	61.6
Naphtha	....	....	....	33.2	....
Kerosene	....	....	....	17.4	17.4
Gas oil	....	....	....	....	13.0
Topped crude	71.1	57.9	37.9	....	....
Reduced crude	....	....	....	20.5	....
Crude residue	....	....	....	....	7.5
Recovery	99.5	99.5	99.5	99.5	99.5
Loss	0.5	0.5	0.5	0.5	0.5

Properties of distillates:	Gasolines			Naphtha	
Gravity, °A.P.I.	77.6	71.4	65.3	55.1	
Specific gravity at 60° F. (15.6° C.)	.6767	.6974	.7190	.7583	
Total sulfur, per cent	0.01	0.01	0.01	0.01	
Mercaptan sulfur, per cent	0.004	0.001	0.002	0.002	
Octane number, C.F.R. motor	66	58	45	21.5	
Vapor pressure, Reid, lb./sq. in.	14.4	....	....	....	
Characterization factor	12.61	12.45	12.35	12.11	
100-cc. distillation:	°F. °C.	°F. °C.	°F. °C.	°F. °C.	
I.B.P.	84 29	54 34	103 39	254 123	
5 per cent	104 40	121 49	136 58	271 133	
10	113 45	133 56	153 67	277 136	
30	141 61	174 79	206 97	291 144	
50	165 74	203 95	247 119	311 155	
70	190 88	228 109	291 144	335 168	
90	220 104	261 127	345 174	370 188	
E.P.	248 120	302 150	392 200	399 204	
Per cent over	97.0	98.0	98.0	99.0	
Per cent bottoms	1.0	1.0	1.0	1.0	
Per cent loss	2.0	1.0	1.0	....	

Properties of intermediate fractions:	Kerosene	Gas oil
Gravity, °A.P.I.	44.0	35.7
Specific gravity at 60° F. (15.6° C.)	.8063	.8463
Sulfur, per cent	0.02	0.04
Mercaptan sulfur, per cent	0.001	....
Color, deg. Saybolt	+17	....
Color, N.P.A.	....	1½
Viscosity, S.U. at 100° F. (37.8° C.), sec.	32.4	42.8
Kinematic viscosity at 100° F., cts.	1.95	5.16
Viscosity, Saybolt Thermo at 60° F.	421	....
	°F. °C.	°F. °C.
Flash, Tag closed	175 79	....
Flash, Pensky-Martens closed	....	280 138
Cold test	....	25 —4
Characterization factor	12.04	11.97
100-cc. distillation:	°F. °C.	°F. °C.
I.B.P.	422 217	535 279
5 per cent	427 219	545 285
10	428 220	551 288
30	441 227	567 297
50	454 234	582 306
70	470 243	603 317
90	506 263	639 337
E.P.	545 285	678 359
Per cent over	99.0	99.0
Per cent bottoms	1.0	1.0
Per cent at 572° F.	....	37.5

Properties of bottoms:	Topped crudes			Reduced crude	Crude residue
Fraction removed:	Gasolines			Kerosene	Gas oil
Gravity, °A.P.I.	45.8	42.9	38.1	32.8	28.2
Specific gravity at 60° F. (15.6° C.)	.7981	.8114	.8343	.8612	.8860
Sulfur, per cent	....	....	0.03	0.06	0.06
B.s. and w., per cent	....	....	0.1	0.3	*0.4
Viscosity, S.U. at 100° F. (37.8° C.), sec.	31.0	33.7	39.8	61.5	....
Viscosity, S.U. at 210° F. (99° C.), sec.	....	....	....	....	47.5
Kinematic viscosity at 100° F., cts.	1.67	2.28	4.24	10.7	....
Kinematic viscosity at 210° F., cts.	....	....	....	....	6.62
	°F. °C.	°F. °C.	°F. °C.	°F. °C.	°F. °C.
Flash, Pensky-Martens closed	....	....	205 96	275 135	415 213
Cold test	....	....	30 1.1	55 13	90 32
Characterization factor	12.03	12.05	12.10	12.08	12.18
100-cc. distillation:	°F. °C.	°F. °C.	°F. °C.	°F. °C.	°F. °C.
I.B.P.	266 130	320 160	420 216	537 281	680 360
5 per cent	289 143	346 174	444 229	554 290	706 374
10	298 148	352 178	450 232	564 296	712 378
30	347 175	397 203	486 252	592 311	726 386
50	411 211	456 236	535 279	628 331	739 393
70	512 267	548 287	606 319	691 366	749 397
90	688 364	704 373	742 394	753 401	760+ 404+
E.P.	758 403	750 399	760+ 404+	760+ 404+	760+ 404+
Per cent over	99.0	99.0	98.5	98.5	98.0
Per cent coke by weight	1.0	1.1	1.3	1.5	1.7
Per cent at 400° F.	47.0	30.5	....	....	....
Per cent at 437° F.	55.5	44.0	3.0	....	....
Per cent at 572° F.	79.0	75.0	61.5	17.0	....

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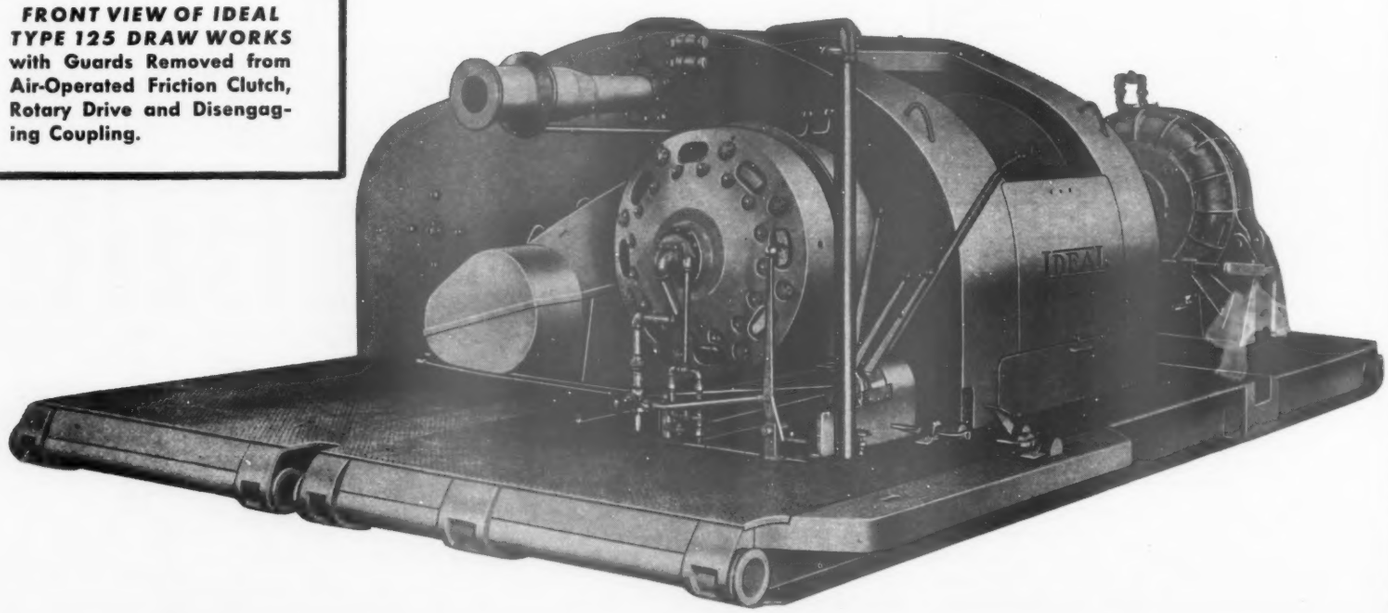

To meet the continual trend toward large internal combustion engine rigs, National now offers the most flexible, the easiest operating and the most accessible hoisting unit ever presented to the oil trade. Designed for drilling operations to a depth of 12,500 feet using 4½" drill pipe, this Rig incorporates the use of two air-operated friction clutches and a unique arrangement of power transmission within the draw works to furnish the operator a wide selection of hoisting and rotary machine speeds, as well as an independent high speed drive for lifting the empty block.

This Draw Works is now available with conventional rig drive hook-ups with either two or three internal combustion engines having a maximum combined total input of 950 H.P. to the draw works, and with hydraulic couplings if desired.

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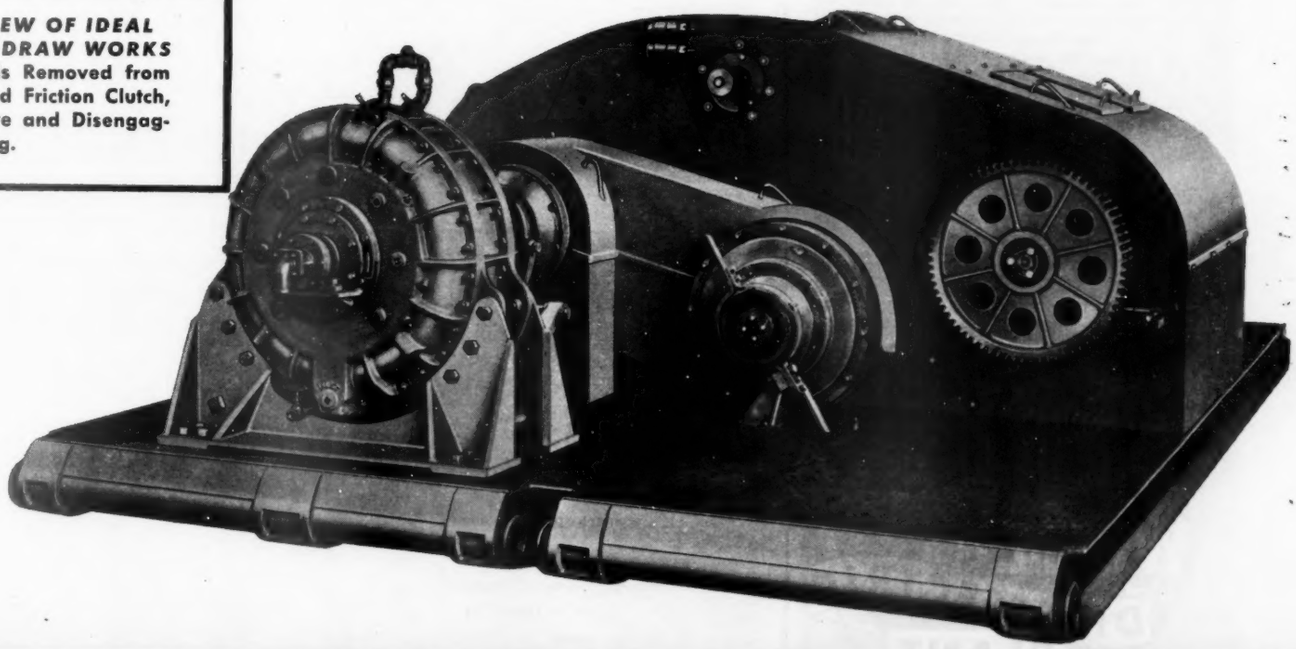

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TABLE 4—SEMICOMMERCIAL FRACTIONATION OF CRUDES

	Sanandita	Camiri
Yield, volume per cent of crude	25.6	6.4
Yield, weight per cent of crude	28.4	7.5
Properties of crude residues—		
Gravity, °A.P.I.	24.6	28.1
Specific gravity at 60° F. (15.6° C.)	.9065	.8866
Sulfur, per cent	0.13	0.12
B.s.&w., per cent	0.1	*0.5
Kinematic viscosity at 210° F. (99° C.) cts.	10.62	6.16
Universal viscosity at 210° F. (99° C.) sec.	61.0	46.0
	°F. °C.	°F. °C.
Flash, Pensky-Martens	335 168	330 166
Cold test	90 32	85 29
Characterization factor	12.04	12.14

	Sanandita				Camiri			
	Atmospheric		Vacuum		Atmospheric		Vacuum	
100 cc. distillation:	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.
I.B.P.	633	334	576	302	618	326	576	302
5 per cent	680	360	675	357	681	361	684	362
10	690	366	702	372	690	366	718	381
30	701	372	787	419	712	378	747	397
50	716	380	832	444	727	386	780	416
70	730	388	905	485	740	393	830	443
90	746	397	...	...	760+	404+	936	502
End point	750	399	960	516	760+	404+	1002	539
Per cent over	95.5		91.0		99.0		96.0	
Per cent coke by weight	4.5		...		1.0		...	
Per cent bottoms by weight	...		9.5		...		4.0	

*Waxy.

TABLE 5—CRACKED RESULTS—DUBBS PILOT PLANT

	Cracking stock—Sanandita crude residue			Cracking stock—Camiri crude residue	
Cracking test No.	1	2	3	4	5
Yields, volume per cent of charge:					
Gasoline	42.3	50.4	51.3	57.2	59.2
Residuum	53.1	42.8	40.2	32.2	31.3
Recovery	95.4	93.2	91.5	89.4	90.5
Liquid volume loss	4.6	6.8	8.5	10.6	9.5
Gas, cu. ft./bbl.:					
Receiver gas	286	375	441	...	500
Stabilizer gas	34	59	59	...	59
Total gas	320	434	500	592	559
Yields, weight per cent of charge:					
Gasoline	34.0	40.5	41.4	47.4	48.7
Residuum	57.2	47.4	45.1	36.4	36.1
Receiver gas	7.7	10.1	11.6	16.2	13.2
Stabilizer gas	1.1	2.0	1.9	...	2.0
Recovery	100.0	100.0	100.0	100.0	100.0
Gas, cu. meters/metric ton of charge:					
Receiver gas	56	74	87	...	100
Stabilizer gas	7	11	11	...	12
Total gas	63	85	98	119	112
Yields, volume per cent of crude:					
Cracked gasoline	10.8	12.9	13.1	3.7	3.8
Cracked residuum	13.6	11.0	10.3	2.1	2.0
Recovery	24.4	23.9	23.4	5.8	5.8
Liquid volume loss	1.2	1.7	2.2	0.6	0.6
Gas, cu. ft./bbl. of crude:					
Receiver gas	73	96	113	...	32
Stabilizer gas	9	15	15	...	4
Total	82	111	128	38	36
Yields, weight per cent of crude:					
Cracked gasoline	9.7	11.5	11.8	3.6	3.7
Cracked residuum	16.2	13.4	12.8	2.7	2.7
Receiver gas	2.2	2.9	3.3	*1.2	1.0
Stabilizer gas	0.3	0.6	0.5	...	0.1
Recovery	28.4	28.4	28.4	7.5	7.5
Gas, cu. meters/metric ton of crude:					
Receiver gas	16	21	25	...	7.5
Stabilizer gas	2	3	3	...	1
Total gas	18	24	28	9	8.5
Analyses of products, untreated gasoline:					
Gravity, °A.P.I.	62.8	62.5	61.7	61.4	61.7
Specific gravity at 60° F. (15.6° C.)	.7283	.7294	.7324	.7335	.7324
Sulfur, per cent	0.01	0.01	0.01	0.02	0.02
Octane No. C.F.R., motor	65.5	65.5	65	65.5	65
Vapor press., Reid, lb./sq. in.	11.6	11.4	9.5	9.8	9.5

100 cc. distillation:	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.
I.B.P.	90	32	101	38	95	35	104	40	95	35
5 per cent	114	46	123	51	122	50	122	50	122	50
10	129	54	140	60	137	58	134	57	137	58
30	189	87	195	91	196	91	198	92	196	91
50	248	120	246	119	249	121	246	119	249	121
70	296	147	296	146	295	146	294	146	295	146
90	359	182	360	182	354	179	353	179	354	179
End point	398	203	402	206	398	203	398	203	398	203
Per cent over	95.0		95.0		98.0		98.0		98.0	
Per cent bottoms	1.0		1.0		1.0		1.0		1.0	
Per cent loss	4.0		4.0		1.0		1.0		1.0	
Composition, liquid volume per cent:										
Total C_4 fraction					0.08				0.07	
Isobutylene					0.76				0.83	
n-Butylene					3.60				4.56	
Butanes					3.76				3.09	
Pentanes to 46° C.					10.95				11.75	
Fraction boiling above 46° C.					80.85				79.70	
Total					100.00				100.00	
Fraction boiling above 46° C.:										
Gravity, °A.P.I.					55.4				55.7	
Specific gravity at 60° F. (15.6° C.)					.7571				.7559	
Residuum:										
Gravity, °A.P.I.	13.5		9.7		7.4		9.2		6.8	
Specific gravity at 60° F. (15.6° C.)	.9759		1.0021		1.0187		1.0057		1.0231	
Furol viscosity at 122° F. (50° C.) sec.	73		180		303		149		211	
Sediment by hot benzol extraction, per cent					0.49				0.60	
	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.	°F.	°C.
Cold test	20	6.7	45	7	55	13	30	—1	65	18
Flash, Pensky-Martens	220	104	210	99	200	93	170	77	180	82
100 cc. distillation:										
I.B.P.	524	273	513	267	510	266	486	252	500	260
Per cent at 572° F. (300° C.)	1.0		1.0		2.0		2.0		1.5	

*Total gas.

(Continued from Page 49)

and processing the gases in a solid phosphoric acid catalytic polymerization unit, 4.8 per cent additional gasoline may be produced from the Sanandita topped crude and 5.9 per cent gasoline may be similarly obtained from Camiri topped crude. Alternately, the gases may be selectively polymerized to obtain 1.0 per cent isooctane from the Sanandita stock and 1.4 per cent isooctane from the Camiri stock, while general polymerization of the residual gases will produce respectively 3.7 per cent and 4.4 per cent polymer gasoline.

In order to meet the color requirements of many South American purchasers, representative blends of the Sanandita and Camiri cracked gasolines were treated with clay, both a standard Georgia (U.S.A.) clay and an Uruguayan clay being used on the former, while the Uruguayan clay alone was used on the latter. Clay treatments were conducted in the liquid phase at a temperature of 450° F. (232° C.) and a pressure of 200 lb. per sq. in. (14.1 kg./sq. cm.). The treated products were rerun using fire and steam distillation to separate polymers, the rerun gasoline washed with dilute sodium hydroxide solution and inspected for inhibitor susceptibility. The results of these tests are summarized in Table 7.

The difference of two points in octane rating between the Sanandita cracked gasoline directly from the pilot plant and after several days' storage cannot be accounted for by loss of light fractions since the vapor pressures, gravities and initial boiling points are closely comparable. This loss in octane on storage is apparently due to chemical changes in the composition which would make a minimum storage time before clay treating advisable.

The clay-treated gasolines required only a dilute caustic wash to give a doctor-sweet product. The loss of 1.5 to 2 points in octane rating upon clay treating is due to mechanical losses as well as the rather high polymerization loss. Although the Uruguayan clay gave a gasoline of satisfactory color and reasonable oxygen-bomb stability, the standard clay-treated Sanandita gasoline is superior. The Camiri cracked gasoline appears to have been the more susceptible to treatment with the Uruguayan clay.

By the addition of only a small quantity of inhibitor to the clay-treated gasolines, finished products of low gum content and excellent stability are obtained.

Summary

The overall yields in processing Sanandita and Camiri crudes are shown in Table 8. In preparing this data it was assumed, in accordance with commercial experience, that polymer from the gasoline treatment was returned to the cracking unit and that its value as cracking stock was equal to the crude residue. Sanandita and Camiri crudes thus produce good yields of gasoline in addition to kerosene and gas oil. The octane rating of the overall gasoline may be increased at a sacrifice in yield through more severe cracking of the crude residues and the use of reforming on naphtha fractions.

TABLE 8—YIELD SUMMARY

Crude source—	Sanandita	Camiri
Yields, volume per cent of crude:		
Straightrun gasoline	37.2	65.1
Treated cracked gasoline	12.8	3.8
Polymer gasoline	1.3	0.4
Total gasoline	51.3	69.3
Kerosene	12.0	16.4
Gas oil	24.9	11.7
Cracked residuum	10.5	2.0
Recovery	98.7	99.4
Liquid volume loss	1.3	0.6
Yields, weight per cent of crude:		
Straightrun gasoline	33.3	61.6
Treated cracked gasoline	11.5	3.7
Polymer gasoline	1.3	0.4
Total gasoline	46.1	65.7
Kerosene	12.0	17.4
Gas oil	26.0	13.0
Cracked residuum	13.0	2.7
Recovery	97.1	98.8
Liquid volume loss	2.9	1.2

TABLE 6—ANALYSES OF CRACKING-PLANT GASES

	Charging stock Sanandita crude residue Cracking test No. 3		Charging stock Camiri crude residue Cracking test No. 5	
Gas stream	Receiver	Stabilizer	Receiver	Stabilizer
Density (air = 1.00)	1.09	1.38	1.08	1.38
Composition, per cent by volume:				
Hydrogen sulfide	Trace	Trace	Trace	Trace
Hydrogen	5.6	0.1	6.0	0.0
Nitrogen	1.8	0.3	0.6	1.6
Oxygen	0.0	0.0	0.0	0.0
Carbon monoxide	0.4	0.0	0.0	0.2
Methane	27.9	2.2	30.2	3.3
Ethylene	7.2	4.1	7.2	4.5
Ethane	19.7	17.0	18.9	17.4
Propylene	11.4	30.3	11.1	32.0
Propane	12.5	38.6	12.0	37.2
Isobutylene	0.9	1.2	1.2	*2.9
n-Butylene	4.5	2.8	3.7	...
Butanes	3.7	2.8	4.1	...
Pentanes and heavier hydrocarbons	4.4	0.6	5.0	0.9
Total	100.0	100.0	100.0	100.0
Unsaturates, total	24.0	38.4	23.2	36.5 (+C_4)
Propylene and butylenes	16.8	34.3	16.0	32.0 (+C_4)
Pentanes and heavier hydrocarbons (as liquid) gal./1,000 cu. ft.	1.6	0.2	1.8	0.3
Per cent by volume of charge	1.7	...	2.1	0.4

*Total C_4 fractions.

TABLE 7—LABORATORY TREATMENT OF CRACKED GASOLINE

	Cracking stock— Sanandita crude residue			Cracking stock— Camiri crude residue	
Treatment	None	—Liquid phase clay—		None	Clay
Type of clay	...	Uruguayan	Georgia	...	Uruguayan
Treating losses:					
Polymerization loss, per cent	...	3.5	4.5	...	4.0
Distillation loss, per cent	...	0.9	1.1	...	0.7
Total loss, per cent	...	4.4	5.6	...	4.7
Analyses of product:					
Gravity, °A.P.I.	62.4	60.5	61.5	60.8	60.9
Specific gravity at 50° F. (15.6° C.)	.7298	.7370	.7332	.7358	.7354
100 cc. A.S.T.M. distillation:	°F. °C.	°F. °C.	°F. °C.	°F. °C.	°F. °C.
I.B.P.	90 32	108 42	103 39	94 34	101 38
10 per cent	140 60	165 74	155 68	137 58	149 65
50 per cent	238 114	250 121	248 120	246 119	251 122
90 per cent	349 176	360 182	352 178	350 177	350 177
End point	404 207	410 210	411 211	400 204	406 208
Vapor press., Reid, lb.	11.0	6.6	7.6	9.4	6.9
Octane number	63	61.5	62	65	63
Color deg. Saybolt	2	27	30+	4	30+
Color stability*		26	30+		30+
Doctor test	Pos.	Neg.	Neg.	Pos.	Neg.
Mercaptan sulfur, per cent	0.001			0.001	
Sulfur, per cent	0.01	0.01	0.01	0.02	0.02
Peroxide No.	1.09			.87	
Gum, mg., cu. dish:					
Without inhibitor	117	8	7	241	14
With U.O.P. No. 1. 0.025 per cent	...	3	2	...	3
With U.O.P. No. 4. 0.005 per cent	...	4	2	...	3
Oxygen bomb ind. per min.:					
Without inhibitor	610	305	550	200	60
With U.O.P. No. 1. 0.025 per cent	...	375	2760	...	2520
With U.O.P. No. 4. 0.005 per cent	...	395	2580	...	2280

*Equivalent to 2 hours midday June sunlight.

Questions and Answers

Methods of Gathering Drilling-Time Data

We would like to know the different methods of gathering drilling-time data on a rotary rig.—C. E. S., Dallas, Tex.

There are four methods in common use today for gathering drilling-time data on rotary wells.

The first of these is simply a notebook and a watch in the hands of the driller who records the interval required to drill each foot. As one author points out, this is probably the most indestructible agent which can be utilized for gathering information. It also is the one having the least precision due to the fact that the driller may be momentarily distracted and not be able to record the exact time for drilling each succeeding foot or the exact point at which a break occurs. If no other instrument is available, the record compiled by the driller will be far better than no record.

The hydraulic-head recording instrument consists primarily of a cylinder attached to the swivel with a hose connecting it to the recording instrument; the cylinder and hose are filled with fluid. Any change in elevation of the swivel automatically changes the position of the stylus making a mark on a chart. The recording instrument is located off of the derrick floor so it will not be subjected to the vibration of the drilling rig. This instrument was completely described by C. A. Yeatman in "Practical Utilization of Rate-of-Penetration Drilling Data," at the 1940 midyear meeting of the American Petroleum Institute at Fort Worth, Tex.

A mechanical method for continuously recording the height of the swivel consists of a wire line attached to the swivel and passing around a drum which turns the cylinder on which the record is made. The line is kept tight by a weight attached to the free end; the weight is encased in a pipe. The weight only moves through one-half the distance the kelly travels. This is accomplished by having the derrick guide pulley about 20 ft. off the derrick floor and during the drilling of the first half of the joint the counterweight is moving downward and during the drilling of the latter half it is moving upward. This instrument was completely described in "Drilling Time Data in Rotary Practice," by P. B. Nichols, The Oil and Gas Journal, July 20, 1939, p. 40.

The fourth instrument consists of a pair of Selsyn motors, one attached to the fast-line sheave of the crown block and the other located in the recording element. Together the two motors make a self-synchronous machine, one motor being a transmitter and the other a receiver. Any movement of the rotor in the transmitting motor is automatically and exactly registered by the receiving motor. The turning of the sheave is automatically recorded and this is readily converted into movement of the drill stem. This system includes a kick-out switch which automatically disconnects the two motors while a trip is being made.

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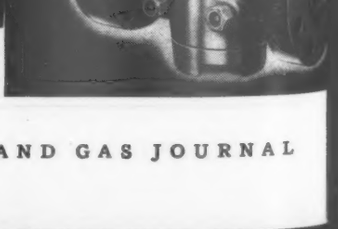


Progress in METALS

By W. L. NELSON

Conservation of Metals As Defense Need

THE key to the present program of national defense is production, but as a leading industrial nation we are prone to be production conscious in spite of costs—and thus to cease to be thrifty.

Chromium is one of a number of metals that must be obtained from foreign ores and hence importation may be difficult, hazardous and costly. Therefore, industrial applications of chromium should be considered on a weight basis so that if an ounce of chromium used in one way can accomplish what by other methods would require, say, a pound of chromium, the method which conserves chromium must be employed. An example is the use of chromglucosate for inhibiting the corrosive action of water in boilers and the like. Far less quachrom glucosate is required to provide protection than chromic acid or sodium dichromate.

As an alloying agent for steels, chromium fills an important need, but in many instances it can be replaced by molybdenum or other elements that are native to the United States. Careful consideration must be given to the properties and composition of the substitute alloys but in most instances, alloys can be substituted which for practical purposes are as satisfactory as the chromium steels.

As an indication of the alloy elements that should be conserved, the following tabulation shows the imports for consumption of several of the common alloy elements.

Ores, metals, alloys, etc.—	Value of imports
Manganese	$ 8,827,000
Chromium	4,933,000
Tungsten	977,000
Vanadium	891,000
Nickel	13,089,000
Tin	44,860,000
Cobalt	1,179,000

Of these elements, manganese, nickel, and tin have unique properties or uses, and hence great industrial changes or developments must take place in order to greatly reduce the consumption of these metals.

Cost of Flame Hardening

THIS department on two occasions has been questioned about the cost of flame hardening. The process of flame hardening involves the heating of the surfaces of such parts as wrench jaws, cams, gears, rods, dies, oil-well tool joints, etc., by means of an oxy-acetylene flame and then quenching the surface. About ¼ cu. ft. of oxygen and a like amount of acetylene is required for a square inch of surface, although in some commercial operations only half as much fuel and oxygen has been required. Thus, a high cost for gases is 1 cent per square inch and the cost may not exceed 0.4 cent per square inch.

Labor costs are more difficult of analysis. In the progressive method of flame hardening by which the torch is passed progressively over the surface of the object, the speed at which plane surfaces are traversed is 6 to 8 in. per minute—or for rounds such as rods or shafts, 3 to 6 in. per minute. Spinning operations take about 1 minute. The width of the path that is traversed is, however, a function of the number and types of torches employed. If a single torch will heat an area that is 1 in. wide the labor cost will range from about 0.4 cent to 1 cent per square inch, including some time for setup of the job. With more complicated torch or mechanical arrangements, the labor cost can be cut to as low as one-tenth of these figures.

The cost of special equipment for flame hardening can range from no cost at all, up to thousands of dollars for elaborate large-scale mechanical arrangements, and hence no figures on the depreciation of investment can be given.

When Alloy Steels Pay

IN recent advertisements of the Republic Steel Co. in trade and technical journals, the arguments for and against the use of alloy steels are presented in such a clear and comprehensive manner that direct quotation from these "ads" seems worthwhile. In reading this statement, the reader is impressed with the directness with which the metallurgical problems of the petroleum industry are involved, and the fact that alloy steels are particularly suited to our demands. The author of this page has taken the liberty of inserting in the quotation by means of parenthesis, some hints as to direct applications to the oil industry.

"Despite the improvements in carbon steels, such steels are limited in application—leaving a wide field where only alloy steels are truly economic. When machine design limits the size of a part (most underground drilling and producing equipment)—when high strength must be combined with light weight—when surface hardness and ductility must be held within close limits on production parts—then alloying elements are important, to produce a steel to do a definite task, and to do more work with certainty of results at lower ultimate cost.

"When sections are large—when hardness must be carried deep into the steel, as in heavy crankshafts, connecting rods, piston rods, large gears and axles (aboveground drilling equipment, transportation equipment, large pumps and engines in both production and refining)—alloy steels are necessary and the cost low in proportion to results. In such parts, with carbon held constant, the depth-hardening quality increases as the alloy content is increased.

"When weight and space limitations demand that smaller sections carry heavier loads safely—the answer must be alloy steels. Under repeated stress, high tensile strength and hardness do not necessarily indicate high fatigue properties (fatigue strength is of primary importance in drilling and producing equipment). Rather, the load-carrying ability of a steel depends upon the alloy constituents and the form of the structure at the time it is bearing the load.

"When steel parts and equipment must withstand high pressures and elevated temperatures, no ordinary steel is suitable. This is exclusively a field for alloy steels that have proved their high resistance to creep, that maintain high strength up to 1,800° F., that resist oxidation and therefore do not lose their strength appreciably through reduction of section (cracking and hydrocarbon refining processes).

"Where steels of high elastic properties and strength are needed, especially for welded structures, and where weight reduction is important, low-carbon complex alloy steels offer distinct advantages. Such alloy steels at equal or higher yield points show low weld-hardening tendencies, improved resistance to corrosion, improved ductility of weld, better retention of toughness at subzero temperatures (low-temperature dewaxing equipment) and better creep resistance at high temperatures."

In considering any particular service or metal part, the adoption of the kind of material to use involves an economic balance between the first cost and the subsequent costs of repairs, replacements, and the attendant down-time costs. Those parts which do not require great strength (or do not fail in service) can obviously be constructed of cheap plain carbon steel whereas the balance swings more and more toward alloy steels as the service becomes more and more severe. On border-line cases, the need for a special steel can only be ascertained by suffering a series of failures in service.

It appears that the steel companies have generally been more than conscientious in advocating use of alloy steels. They have frequently "bent backward" in assuring themselves that alloy steels were really required. In part, this attitude may have been in self-interest because until an alloy steel is used in relatively large tonnages, the difficulties and costs of manufacture, application, and recovery of scrap requires a large capital outlay by the steel company.

Welding Terms

Types of Welds

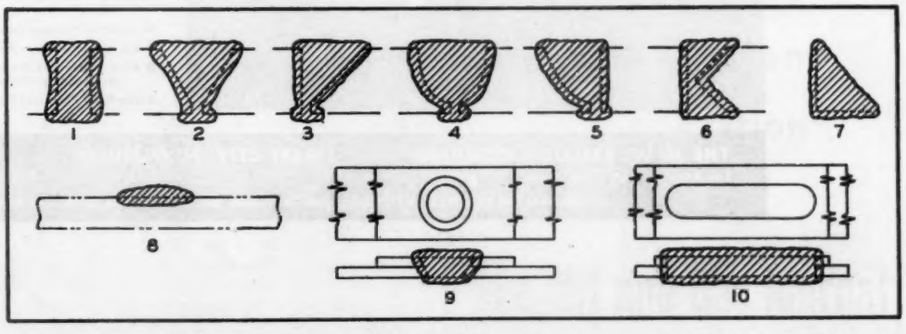
THE main types of welds are the bead, fillet, plug, slot, and groove welds. Illustrations of these types are given on this page as Figs. 1 to 10. Of these, the first six figures are classed as groove-type welds, namely: Fig. 1, square groove; Fig. 2, single-V groove, Fig. 3, single-bevel groove, Fig. 4, single-U groove; Fig. 5, single-J groove; Fig. 6, double-bevel groove.

The double-bevel groove shown as Fig. 6 is an illustration of the double-groove type of grooves. In these, grooves are cut on both sides of the plate. All of the types shown in Figs. 2 to 5 inclusive, may also be utilized as double-type groove welds. Thus, there are in all nine kinds of groove welds.

The bead weld, shown in Fig. 8, is defined by the American Welding Society as "a type of weld made by one passage of electrode or rod." Most welds require several passes of the rod and during each pass a so-called bead is produced—and the whole operation is referred to as "beading."

In corner, lap, or tee joints, the two parts of the structure present faces at right angles to one another so that no type of groove or preparation of the joint is necessary. Such joints may be joined by a fillet weld as indicated in Fig. 7.

Plug and slot welds are indicated in Figs. 9 and 10. In these, two plates are fastened together by preparing a hole which extends through both plates.



(1) Square groove, (2) single-V groove, (3) single-bevel groove, (4) single-U groove, (5) single-J groove, (6) double-bevel groove, (7) fillet weld, (8) bead weld, (9) plug weld, (10) slot weld

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Pipe-Line Activity

Stanolind Considers Shipping Gulf Coast Crude North

Stanolind Pipe Line Co. is making plans to provide for the movement of Gulf Coast crude to the company's refineries at Wood River, Ill., and Whiting, Ind. If the company proceeds with this program, crude will be shipped some time in the spring from Fairbanks, Tex., which is 15 miles northwest of Houston. Early in April it is expected that Stanolind will start shipments of crude from East Texas north to the company's refineries. Shipments will commence as soon as repair work now in progress is completed. This East Texas oil will be delivered, as in the past, by Humble Pipe Line Co. to the Stanolind system at Mexia, Tex., where it will be pumped north through the trunk line. It is anticipated that shipments from East Texas will be between 10,000 and 15,000 bbl. daily.

Bids have been held in abeyance which have been submitted by contractors for the construction of 7.7 miles of 6-in. for connecting the Stanolind system with a pumping station in the Fairbanks area. No definite arrangements have yet been made and negotiations are still under way for making provisions for the program under consideration. It is possible that Stanolind may take over a gathering system now operating in the Fairbanks, Satsuma, North Houston, and Rosslyn areas which handles about 6,000 bbl. daily.

Before this year, Stanolind has never moved oil northward from points south of Mexia, Tex.

Canadian Gas Interests Plan 100-Mile Line in Alberta

CALGARY, Alta. — An extensive transmission-line program for East Central Alberta has been announced by E. W. Bowness, vice president of the Canadian Western Natural Gas, Light, Heat & Power Co. in behalf of that company and Northwestern Utilities, Ltd., of Edmonton. Financing has been arranged in New York for slightly more than 100 miles of line from the Kinsella gas field to Red Deer. The line will serve Camrose, Wetaskiwin, Ponoka, Lacombie and several smaller communities along the route, and will cost approximately $1,700,000. The project is subject to arrangements with the U. S. Securities Exchange Commission for the transfer of funds, and with the federal government at Ottawa for allowing the manufacture of the pipe.

In addition, Northwestern Utilities is planning to complete duplication of its entire transmission line from the Kinsella and Viking fields to Edmonton at an estimated cost of $700,000. The original Viking-Edmonton line has been partially duplicated and was recently extended to Kinsella. This undertaking, financed in Canada, will also include work necessitated by wartime demands in Edmonton, and new gas development work. The Kinsella-Red Deer system will be operated by Northwestern Utilities, Ltd.

The Kinsella field, south and east of Viking, was opened in 1929, when Messaba Oil & Gas Co. and associate interests, drilling in LSD 3, 29-48-10w4, brought in a gasser good for 21,000,000 cu. ft. Northwestern Utilities 1, LSD 4, 25-47-11w4, drilled in 1932 to 2,184 ft., was good for 18,000,000 cu. ft.; and Northwestern 2, LSD 1, 17-47-11w4, was good for 7,600,000 cu. ft.

National Refining Pipe Line Plans Work in Oklahoma-Kansas Area

The pipe-line department of National Refining Co. is doing preliminary work preparatory to writing specifications for work this year which calls for the handling of about 115 miles of line. Most of this will be the taking up of lines. Recent pipe-line construction makes it possible to eliminate lines which are no longer required; other changes are in order because of shifts which have been made in the routing of shipments as the result of the development of new fields and the decline of old fields. New construction will consist of the laying of 8½ miles of 6-in. to the company's station near Copan, Okla. North from this station to the company's refinery at Coffeyville, Kans., the company will take up 26 miles of 6-in.; northwestward from this station, the company will take up 64 miles of 4-in. which connects with the Hoosier, Kans., station. Between Wann and Bartlesville, Okla., 17 miles of 4-in. will be taken up.

Northern Natural Orders Four Compressor Units

Northern Natural Gas Co. has recently placed an order for four compressor units. Delivery of this equipment is expected during the summer and installation work should be completed early in the fall. These units will increase the capacity of the transmission system. One unit of 1,300 hp. will be installed at the company's station at Mullinville, Kans.; another unit of the same size will be installed at the Bushton, Kans., station. Two 800-hp. units will be installed at an entirely new plant which will be located about 15 miles north of Fremont, Neb.

Southern Natural Considers Pipe-Line Construction

Construction of a pipe line from Shelby County, Texas, and Logansport, De Soto Parish, Louisiana, gas field to Monroe, La., and the extensive development of gas reserves in that area are reported to be under consideration by Southern Natural Gas Co. It is also reported that the company may issue 484,379 additional shares of stock for $4,796,790. Southern Production Co., an affiliate of Southern Natural Gas Co., has acquired gas rights on more than 5,000 acres in the Logansport-Joaquin field.

Standard of Louisiana Extends Pipe-Line Facilities

An 8-in. pipe line, extending 32 miles from Rapides Station near Alexandria, La., to the new Olla and Nebo fields near Searcy in La Salle Parish, Louisiana, and a pumping station and general improvements to cost approximately $360,000 are included in the plans for increased facilities of Standard Oil Co. of Louisiana, according to company officials.

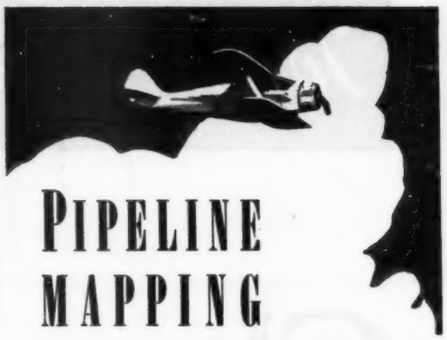
Coffield & Guthrie Extend Gathering System

COLORADO, Tex.—Coffield & Guthrie, Inc., Corsicana, Tex., are preparing to start work on a 5-mile gathering system for the new Dockery & Robbins extension area of the Sharon field in Scurry and Mitchell counties. The Corsicana firm 2 years ago constructed the pipe-line outlet for the original Sharon field in southern Scurry County and the new project will be a south extension to that field's gathering system.

Large Gas Reserves Are Developed For Montana Pipe-Line Systems

Large natural-gas reserves are being developed in counties of Montana which are served by the pipe lines of Montana-Dakota Utilities Co. and other systems. Recently eight gas wells have been completed in these areas. Of these, Montana Gas Corp. has three wells in Blaine County which are reported as follows: 5,500,000 cu. ft., 201 lb.; 3,900,000 cu. ft., 204 lb., and 22,700,000 cu. ft., 175 lb.

Montana-Dakota Utilities Co. has two wells on the Baker Glendive anticline in Cedar Creek making 260,000 and 486,000 cu. ft., the latter having 416 lb. pressure; this company has a 566,000-cu. ft. and a 785,000-cu. ft. well in the Bowdoin field of Phillips County, which are normal for the county. Frank P. Walsh brought in a 1,750,000-cu. ft., 90-lb. well in the Devon district of Toole County. It has been observed that there is considerably more activity in the Bowdoin field than there was at this time last year.



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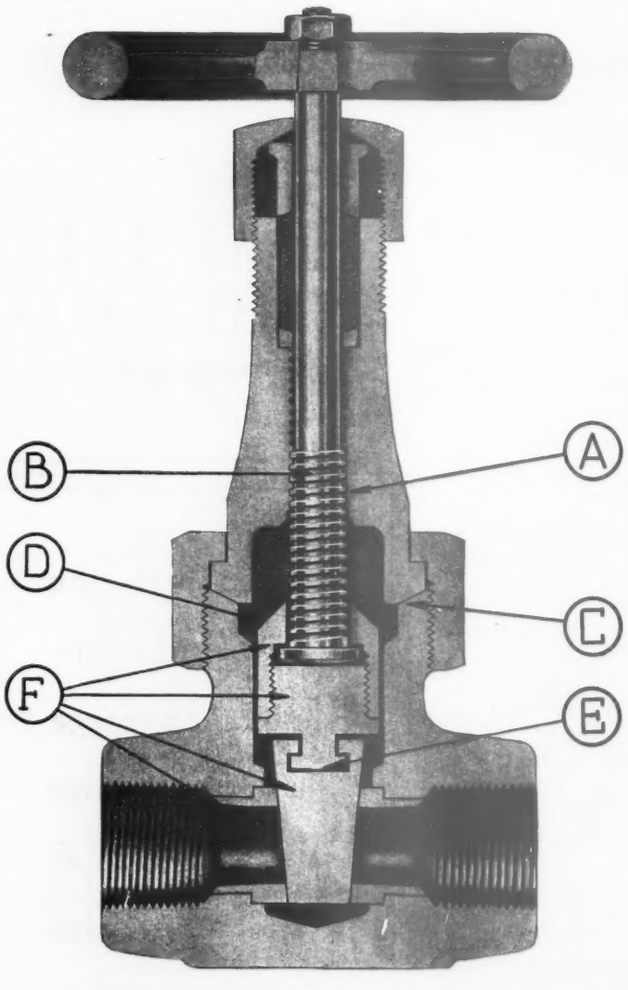

Sectional View
Chapman List 960
Inside Screw Model

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For real economy and efficient, trouble-proof performance, Chapman List 960 challenges comparison with valves of any other type — globe or gate — in any design or material. These sturdy valves are made in two rising stem models — inside and outside screw, with screw ends for threaded pipe, sizes ¼" to 2". Bodies, bonnets and union nuts are of high grade forged steel. Stems, wedges and seat rings are of stainless steel and absolutely interchangeable. Suitable for all pressures to 800 lbs. at 750° F. or 1500 lbs. cold working pressure, you can standardize on List 960 valves and effectively solve your small-valve problem.

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Inside Screw Model

A. All threads inside valve
B. Quick acting threads
C. Ball Joint connection
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E. Flexible stem connection
F. Replaceable Stainless Steel parts

Outside Screw Model

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

Completions rose sharply during the week to 504, which was about the December level, bringing this year's activity to date almost level with that of last year. Of the more-important producing states, Illinois and Texas are running low, with California and Kansas showing substantial gains. Among the less-important states, Montana, Kentucky, and the Appalachian districts also show increasing activity. The increasing importance of gas is reflected in the gains in these areas.

The Wilcox trend play scored several important successes in the upper Gulf Coast sector of Texas and may maintain activity on the Gulf Coast. The areas which are now being watched for active drilling campaigns are Inglewood and the northern part of Los Angeles County in California and the East Texas Woodbine play. After several years of steady and conservative development, the Texas Panhandle may produce some excitement if the potential town-lot drilling play starts in the town of Pampa. The Fort Worth basin play is expanding far over the edge of the basin with a distinct revival of activity west of the Bend arch.

CALIFORNIA: After the deep Sentous zone was discovered at the south end of Inglewood, the operators moved up on the structure for another test. This well is showing up as a good producer and may start a town-lot drilling campaign in the field. The Oak Canyon and Union Avenue areas of Los Angeles County have wildcats which are being tested. Both appear to be small pumpers. Greeley has been extended to the northwest and the pool may eventually be joined to Rio Bravo. A test is being started to determine whether or not Northeast and Southeast Coalinga are a single accumulation (p. 65).

TEXAS GULF COAST: The Wilcox play is settling down to a less speculative basis as successful wells are completed in Lavaca and Colorado counties. A Wilcox well is ready for testing in the Magnolia area of Montgomery County and tests are nearing critical depths in San Jacinto, Grimes and Washington counties (p. 79).

TEXAS PANHANDLE: A townsite drilling campaign may result from a test just outside the city limits of Pampa (p. 68).

OHIO: Geauga County's deep well has penetrated the Trenton 740 ft. with nothing showing. Town-lot development in the Newark gas field is spreading to the north end of the city (p. 62).

NORTH LOUISIANA: The Joaquin field continues to attract attention as a 140,000,000-cu. ft. well is completed in De Soto Parish. A Travis Peak test in Lisbon surprised operators by trying to blow out just as it was about to be plugged. Two Wilcox dry holes were drilled in Caldwell Parish and one in Grant (p. 73).

ILLINOIS: Louden continues to demonstrate the efficiency of production control as the field is running slightly above last year's level with 70,102 bbl. average daily production. Salem—Devonian and all—is now producing 109,248 bbl. at less than half of last year's level. The Salem Trenton test is now reported pumping 40 bbl., but is not yet completed. Gallatin, Hamilton and White counties kept completions up as they accounted for 27 out of 35 producers (p. 80).

EASTERN TEXAS: A new part of Wood County, the Crow area, located about 7 miles west of Hawkins, was given two new wildcat tests and indications of a third as development steadily mounted throughout the entire district. New wildcats were either started or tentatively staked in Smith, Van Zandt, Cherokee, Anderson and Houston counties (p. 83).

WEST TEXAS: Possibility was seen at the close of the past week that Pecos County would receive its third deep Ordovician producing oil field. A wildcat about 9 miles west of the Apco field was swabbing and flowing oil from saturation in the Ellenburger lime. New locations in the West Texas district took a decided jump during the week, there being a total of 67 sites staked (p. 68).

NORTH TEXAS: With no new fields discovered during the past week in North Texas, attention was turned to early developmental steps in many of the recently opened areas. Several new fields received new tests and also new wildcats were staked in several counties (p. 71).

WEST CENTRAL TEXAS: New wildcat locations, the largest number in a 7-day period for several months, featured the development of the week in West Central Texas. New exploratory tests were distributed two each in Brown, Taylor and Fisher counties and one each in Eastland, Jones and Throckmorton counties (p. 71).

FOREST CITY BASIN: Some operators in the Falls City pool are predicting early decline in returns because of rapidity of water encroachment. Most wells have been drilled too deep (p. 60).

COMPLETIONS IN ALL FIELDS . . .

(Week ended February 1, 1941)

	Oil	Gas	Dry	Total	1941 total comp. to date	1940 total comp. to date
N. Y., Pa., and W. Va.	65	12	3	80	419	352
Ohio	10	11	8	29	123	67
Indiana	9	2	0	11	37	23
Kentucky	16	3	5	24	56	29
Illinois	35	0	16	51	257	308
Michigan	11	1	7	19	72	108
Kansas	23	1	2	26	144	110
Oklahoma	19	4	3	26	131	134
Texas:						
North Central Texas	33	1	18	52	219	260
West Texas	29	0	2	31	169	173
Texas Panhandle	10	0	2	12	43	55
Eastern Texas	17	2	8	27	115	99
Texas Gulf Coast	11	0	5	16	81	123
Southwest Texas	19	2	8	29	127	182
Total Texas	119	5	43	167	754	892
North Louisiana	7	3	6	16	56	62
Louisiana Gulf Coast	8	2	0	10	67	72
Total Louisiana	15	5	6	26	123	134
Arkansas	0	0	1	1	16	22
Mississippi	2	0	1	3	14	15
Montana	3	0	0	3	25	14
Wyoming	1	0	1	2	17	16
Colorado	0	0	0	0	0	3
New Mexico	6	1	2	9	35	54
California	25	0	2	27	117	95
Total United States	359	45	100	504	2,340	2,376
Total previous week	307	33	115	455		
Week ended Feb. 3, 1940	314	34	91	439		

SOUTHWEST TEXAS: The second test in the new Willamar pool in Willacy County missed the pay but may have picked up another 200 ft. lower. Either a new producing area or a 1-mile extension to the Boyle pool has been found in Starr County. North Rincon, Starr County and Holben, Jim Hogg County, were extended (p. 67).

LOUISIANA GULF COAST: Titanic Oil Co. has apparently brought in its second discovery in 2 weeks by a test in northeastern Iberville Parish. Schooner Bayou appears to have a shallower sand 1½ miles northeast of the discovery well (p. 70).

OKLAHOMA: Booch sand production is found midway between Fish and East Little River. The Charlson sand in the old Chickasha gas field has sprung into greater prominence with a gas well rated at 440,000,000 cu. ft. (p. 63).

WEST VIRGINIA: The Ravenswood gas field in Jackson County had its second good well as a 4,000,000-cu. ft. gasser was brought in 4 miles from the discovery. The deep Harrison County test is now at 9,815 ft. (p. 78).

MICHIGAN: The recently drilled gusher in the Tallmadge sector of the Walker field has revived drilling in the pool. In spite of good completions, Michigan's production has dropped steadily to below 40,000 bbl. (p. 84).

WYOMING: Wertz was extended one location by a 900-bbl. well in the Tensleep. Repressuring of the Leo sands in Lance Creek has begun (p. 76).

By
ROBERT INGRAM

Ray Pool Gets First Arbuckle Show From North Outpost

DISCOVERY of possible Arbuckle dolomite production in the newly discovered Ray pool of Phillips County drew attention this week to northerly development along the Barton arch, or Central Kansas uplift. A good showing was had in rotary-drill cuttings at an outpost test ½ mile north of production in Cities Service 1 Noel, SW SE SE 29-5-20w, from the Arbuckle. Western Rice County also had an interesting test at a rank wildcat in the Silica sector where Bunting, Dowling & Skow, independent operators, recovered saturated dolomite in 1 Mantz, W½ SW NE 17-19-10w, at a depth of 3,322 ft.

Cities Service opened the Ray pool in September 1940, with production from the Reagan sand which has been the chief producer for other wells to date. The 1 Noel found Arbuckle dolomite at 3,582-87 ft. which showed saturation in the cuttings. Casing was set at 3,584 ft. and the well was being tested at week's end. Production from the Arbuckle would increase the importance of the pool considerably.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Kraft	1	92	3,401
Stoltenberg	1	3,000	3,276
Trapp	1	324	3,331
Hall-Gurney	3	6,258	9,014
Ray	1	3,000	3,586
Other fields	15	14,605	43,266
Wildcat	1	128	3,787
Dry holes: Fields	1	.....	2,770
Wildcat	1	.....	1,747
Gas wells: Fields	1	*0.96	4,255
Total	26	.....	78,433
Recompletions	2	452	.....

*Million cu. ft.

Meantime another Ray pool test which appeared last week to be a well from granite wash topped at 3,529 ft. was a disappointment. Cetal Oil 1 Hixenbaugh, SE NE NE 1-6-21w, was shut down at week's end after operators recovered only 2 gal. of oil per day after perforating casing with nine shots from 3,525-35 ft.

Seward Discovery Is Official

Official recognition of the state's first 1941 discovery, the Seward pool in northwestern Stafford County, was given by the conservation board. The discovery well was Derby, Perry Thayer et al 1 Roach-Wilson, NW NW SE 12-22-14w, which drew an initial potential of 128 bbl. of oil a day after acid treatment in the Arbuckle dolomite at 3,749-87 ft.

Meantime, the Kansas Corporation Commission heard lengthy evidence at Wichita and Topeka on an application of the Lario Oil & Gas Co. to combine the South Silica and Silica pools of Barton and Rice counties. It was brought out at the hearing that "there is no interference data between the two pools," and that unless more wells are drilled, there can be no proof that the areas are separate reservoirs. It was also stated by C. Henry Keplinger, Wichita, that total withdrawals from the Silica field were 25,000,000 bbl., while those from South Silica totaled 3,500,000 bbl.

Operations in the state were still bogged down to some extent by bad weather, but approximately 264 active wells were reported of which about 20 per cent were shut down temporarily because of rain and mud. Twenty-six wells were completed during the week.

KANSAS COMPLETIONS

Barton County

Kraft pool: Phillips 1 Frees, S½ SW NW 35-16-11w, pumped 92 bbl., Arbuckle 3,394-3,401 ft.

Butler County

Eldorado Pool: Cities Service 86 Pierpont, NE SE NW 33-25-5, pumped 23 bbl., Kansas City series, 1,942-57 ft.

Cities Service 20 Boyer, SW SW SE 8-26-5, pumped 31 bbl., Lansing 1,651-1,703 ft., T.D.

Garden pool: Al Becker 1 Webber, SW SE NW 32-26-6, dry, T.D. 2,770 ft., Lansing 1,810 ft., Kansas City, 2,134 ft., Mississippi lime 2,770 ft., at 2,790 ft. pumped an estimated 10 bbl.

Young pool: Eldorado Refining 1-A Young, E½ SE NW 27-26-7, pumped 36 bbl., Kansas City 2,162-95 ft.

Cowley County

South David pool: Arthur Brewer 4 David, SW NE NE 2-31-4, pumped 50 bbl., Barton 2,955-85 ft.

Hittle pool: Hawkeye 4 Hittle, SE NW NE 21-31-4, flowed 2,290 bbl., Arbuckle 3,350-58 ft.

Rock pool: Phillips 4 Starkey, SE NE SE 16-30-4, pumped 227 bbl., Barton 2,762-82 ft., T.D. 2,785 ft.

Ellis County

Marshall pool: Lario Oil & Gas 11 Marshall, NW SW 31-11-17w, swabbed 80 bbl. an hr., Arbuckle 3,657-61 ft., T.D. 3,686 ft.

Burnett pool: Shell 4-A Riddler, NW cor. 12-11-18w, pumped 1,830 bbl. oil and 1,170 bbl. water daily, Arbuckle 3,416-52 ft., T.D. 3,469 ft.

Blue Hill pool: J. J. Hall 15-B Oswald, NE NW SE 11-12-16w, pumped 1,592 bbl., Lansing 3,100-05 ft., acid.

Ellsworth County

Stoltenberg pool: Texas 3 Schroeder, N½ SE SW 27-16-10w, 3,000 bbl., Arbuckle 3,269-76 ft.

Breford pool: Magnolia 5 Andrae, SW cor. 7-17-10w, old well drilled deeper to Arbuckle 3,311-33 ft., pumped 277 bbl.

Edwards pool: Continental 6 Rolfs, W½ W½ NE 28-17-8w, pumped 509 bbl., Arbuckle 3,207-34 ft.

Wilkins pool: Gulf 3 Mehl, N½ SE NW 18-17-9w, 3,000 bbl., Arbuckle 3,254-59 ft.

Greenwood County

Sallyards pool: Harwood 13-A Moss, NW SE NW 30-25-9, pumped 14 bbl., Barton 2,470-94 ft., T.D. 2,498 ft.

Outpost: Bridgeport Machine 2 Pedroja, SE NW SW 5-26-10, pumped 15 bbl., Mississippi lime 2,132-68 ft.

Pawnee County

Pawnee Rock pool: Stanolind 3 Belt, EL NW SW 13-20-16w, flowed 2,332 bbl., Arbuckle 3,858-63 ft., T.D. 3,867 ft.

Phillips County

Ray pool: Cetal Oil 3 Ray, NE SE NE 32-5-20w, 3,000 bbl., La Motte sand 3,563-86 ft.

Pratt County

Cairo pool: Skelly 1 Morrison, C N½ 9-28-11w, 963,000 cu. ft. gas, 1,380 lb. C.P., Viola 4,229-55 ft.

Russell County

Trapp pool: Cities Service 4-A Eichman, EL SW NE 12-15-14w, pumped 324 bbl., Arbuckle 3,317-31 ft.

Hall-Gurney pool: Texon 5 Hall, N½ N½ SE 26-14-13w, pumped 258 bbl., Lansing 2,848-2,921 ft.

Cities Service 4 Graham, NL SE NW 28-14-13w, 3,000 bbl., Lansing 2,893-2,921 ft., T.D. 3,170 ft.

Harry Gore et al 3 Michel, EL SW NW 36-14-14w, 3,000 bbl., Gorham sand 3,170-72 ft.

Gorham pool: Darby Pet. 3-C Dumler, SE SW NE 11-14-15w, old well deepened to Arbuckle 3,305 ft., T.D., pumped 175 bbl.

Rooks County

Laton pool: Cooperative 7 Beardmore, N½ NE NE 10-9-16w, 2,576 bbl., acid.

Stafford County

Wildcat: Perry Thayer et al 1 Roach, NW NW SE 12-22-14w, pumped 128 bbl., Arbuckle 3,747-87 ft.

Woodson County

Wildcat: Aikman & Braden 1 Sasse, NW NE SW 36-23-13, dry, T.D. 1,761 ft., pumped 12 bbl. oil and 8 bbl. water at 1,747 ft., at T.D. hole full of water.

AVERAGE DAILY PRODUCTION

LEADING KANSAS FIELDS

	Feb. 1	Jan. 25
Burrton	8,100	8,100
Ritz-Canton	4,200	4,250
Graber	2,450	2,350
Hollow-Nikkel	1,400	1,450
Voshell	1,750	1,750
Wellington	1,250	1,350
Lorraine	950	800
Stoltenberg-Wilkins	5,405	5,210
Bloomer	5,700	5,300
Chase	5,150	5,400
Geneseo	3,350	3,200
Silica	16,700	17,800
Wherry	3,450	3,500
Trapp district	17,600	18,200
Balance Russell County	20,150	20,050
Sedgwick County	3,150	3,150
Bemis	10,050	10,250
Burnett	6,650	7,050
Kingman County	855	1,180
Stafford County	10,855	10,715
Greenwood County	8,350	8,050
El Dorado	7,000	6,850
Total Kansas	198,000	199,400

KANSAS DRILLING REPORT

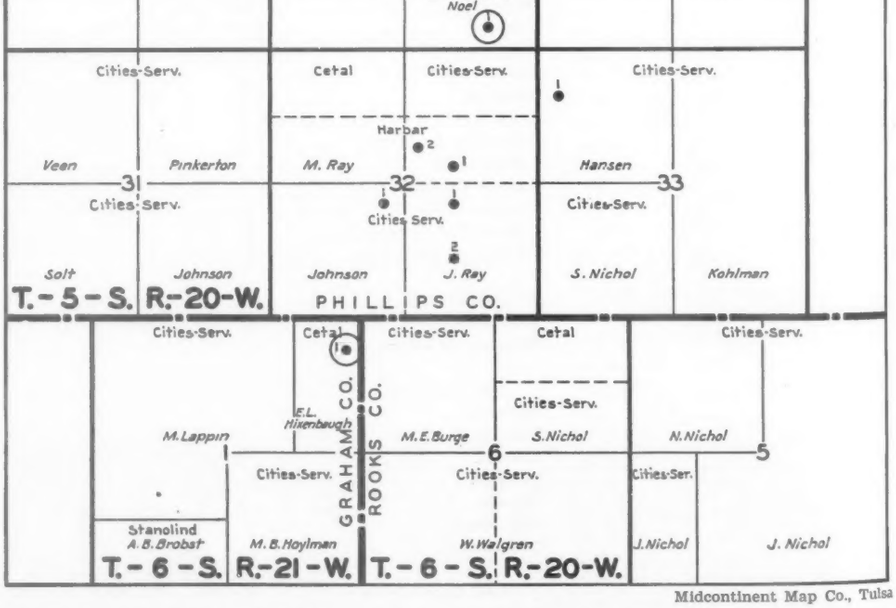
Barton County

Fred Steckel 1-A fee ..... S½ SW NE 11-20-12w Arbuckle 3,353-56 ft., 5-in. 3,353 ft., standard tools 3,356 ft.

Isern 1 Lillard ..... W½ SW SE 6-16-11w Anhydrite 686 ft., drilling 2,380 ft.

C. Piggott et al 1 Beran ..... E½ NE NE 24-17-12w Pay zone 3,116-22 ft., 1,000 ft. oil in hole in 15 hr., bailed 5 bbl. oil and 1 bbl. water per hr., swabbed 10 bbl. oil and 14 bbl. water in 8 hr.. 7-in. 3,128 ft., pay

(Continued on Page 84)



Midcontinent Map Co., Tulsa

The new Ray pool of Phillips County drew attention this week with testing at two outpost wells. Cities Service 1 Noel, circled at top, apparently extended the pool north with showings in the Arbuckle. Cetal 1 Hixenbaugh, circled in 1-6-21w, failed to make a well in granite wash

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PERCO DIVISION
PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA

Geauga County Test Fails to Get Production in Trenton

By STAFF CORRESPONDENT

NEWARK, Ohio, Feb. 3.—Of the 29 completions in the Ohio fields, 11 were gas, 10 were small oil wells and 8 came in dry. In the Newark pool in Licking County, the town-lot development is spreading from the western end of Newark to the northern section of the city with the completion of an 800,000-cu. ft. gasser.

Deep tests.—The East Ohio Gas Co. 1 G. W. Crile, Chardon Township, Geauga County, struck water at 6,000 ft., still drilling. Top of Trenton was had at 5,260 ft. Ohio Oil Co., in Wooster Township, Wayne County, is drilling at 2,000 ft. The Magnolia test in Smith Township, Belmont County, is drilling at 1,400 ft.

SUMMARY OF COMPLETIONS

Ohio

	No.	Bbl.	Footage
Oil wells	10	82	15,825
Gas wells	11	*7.9	30,663
Dry holes	8	.....	15,361
Total	29	.....	61,849

*Million cu. ft.

Indiana

	No.	Bbl.	Footage
Oil wells	9	758	24,754
Gas wells	2	.....	3,179
Dry holes	0	.....	.....
Total	11	.....	27,933

Eastern Kentucky

	No.	Bbl.	Footage
Oil wells	11	76	9,331
Gas wells	3	*0.8	7,348
Dry holes	1	.....	850
Total	15	.....	17,529

*Million cu. ft.

Western Kentucky

	No.	Bbl.	Footage
Oil wells	5	127	4,967
Dry holes	4	.....	4,497
Total	9	.....	9,464

Also in Belmont County the test of the Natural Gas Co. of West Virginia on the E. A. Mobley farm in Section 18, Smith Township, topped the White Clinton sand at 7,765 ft. and is 16 ft. in that formation with no show.

Athens County

Carthage Township: Snyder et al 1 A. Burdette, Sec. 17, dry, Injun, T.D. 1,250 ft.
Snyder et al 1 A. R. Butcher, Section 2, dry, Berea, T.D. 1,940 ft.

Cuyahoga County

Mayfield Village: Benedum-Trees 1 Dean properties, Lot 35, 990,000 cu. ft. gas, Newburg, T.D. 2,832 ft.
Benedum-Trees 1 E. Smith, Lot 42, dry, Newburg, T.D. 2,925 ft.
Highland Heights Village: Benedum-Trees 1 Harold Ruple, Lot 20, 1,000,000 cu. ft. gas and 10 bbl. oil, Newburg, T.D. 2,902 ft.
Benedum-Trees 1 I. Meredith, Lot 20, 1,000,000 cu. ft. gas and 2 bbl., Newburg, 2,855 ft.
Benedum-Trees 2 Alfred G. McGurer, 1,000,000 cu. ft. gas and 3 bbl., Newburg, T.D. 2,853 ft.

Gallia County

Addison Township: Ohio Fuel 1 William Thomas, Sec. 17, 40,000 cu. ft. gas, second Berea, T.D. 1,826 ft.

Jefferson County

Island Creek Township: Costonia Oil 2 Oma L. Jewett, SW Sec. 34, dry, Berea, T.D. 1,495 ft.
Saline Township: C. S. Kelley et al 5 Ella B. Householder, SW Sec. 29, 8 bbl., Berea, T.D. 1,340 ft.

Knox County

Union Township, Village of Danville: J. B. Reed 1 E. McDermot, 370,000 cu. ft. gas, Clinton, shot, T.D. 2,822 ft.
Upham Gas 1 Judson Loney, Sec. 4, 3,000,000 cu. ft. gas, Clinton sand, T.D. 2,820 ft.

Licking County

Newark Township: Hoover Bros. 1 R. W. Schisler, west part, 200,000 cu. ft. gas, Clinton, shot, T.D. 2,380 ft.
Rutledge et al 1 Ray Osborn, west part, 20,000 cu. ft. gas, Clinton, plugged, T.D. 2,360 ft.
Mary Ann Township: Monroe Oil Co. 4 J. A. Hughes, fourth quarter, 10 bbl., shot, Berea, T.D. 680 ft.
H. Leigtner 2 Robert S. Reidenour, fourth quarter, 8 bbl., shot, Berea, T.D. 810 ft.
Ohio Fuel 1 Emery Bower, Sec. 16, dry, Clinton, T.D. 2,771 ft.

Lorain County

La Grange Township: Ohio Fuel 1 John Mashinski, Lot 17, dry, Clinton, T.D. 2,396 ft.
Penfield Township: Wiser Oil 3 Homer Sooy, 180,000 cu. ft. gas, shot, Clinton, T.D. 2,421 ft.
William Dempsey 1 E. M. Bunt, Lot 41, Sec. 6, dry, Berea, T.D. 215 ft.

Medina County

Chatham Township: Marine Trust A-7 William P. Wertz, Tract 14, Lot 5, 5 bbl., Berea grit, T.D. 400 ft.
Marine Trust A-8 William P. Wertz, 5 bbl., Berea, T.D. 410 ft.
Marine Trust A-9 William P. Wertz, 5 bbl., Berea, T.D. 395 ft.
Marine Trust O-8 William P. Wertz, input well, Berea, T.D. 412 ft.
Marine Trust O-9 William P. Wertz, input well, Berea, T.D. 399 ft.
Marine Trust O-10 William P. Wertz, input well, Berea, T.D. 440 ft.
Marine Trust O-11 William P. Wertz, input well, Berea, T.D. 420 ft.
Lafayette Township: Clyde Cole 1 O. R. Culler, Lot 35, 4 bbl., shot, Berea, T.D. 558 ft.

Monroe County

Seneca Township: Otto Spangler et al 2 Mary McCort, Sec. 36, 50,000 cu. ft. gas, Berea, shot, T.D. 1,580 ft.

Muskingum County

Harrison Township: Atha 3 C. S. Sherman, Sec. 17, 15 bbl., naturally, Medina, (Clinton sand dry), T.D. 4,120 ft.
Blue Rock Township: Gas Producing Co. of Ohio 1 Warren Smith, NW Sec. 16, pumped 12 bbl., Medina, T.D. 4,210 ft.

Tuscarawas County

Lawrence Township: Natural Gas Co. of W. Va. 1 Emery Dayton, Sec. 4, 725,000 cu. ft. gas, shot, Clinton, T.D. 4,611 ft.

Washington County

Dunham Township: McTaggart 1 Alice Stribling, Sec. 12, 300,000 cu. ft. gas, Macksburg 800-ft. sand, T.D. 1,270 ft.

INDIANA

EVANSVILLE, Ind., Feb. 3.—Operations in Indiana were near normal during the past week with 12 reported completions. Of these, nine were oil wells and two were gassers. No dry holes were reported in the state during the week. With the exception of one, all of the oil wells were completed in Gibson County.

Carter 1 Highman, a closely watched wildcat in SW SE SW 31-5s-13w, Posey County, found both the Tar Springs and Bethel formations dry during the week. However, a show of oil was found at 1,968-79 ft., most of this being in the Palestine which was topped at 1,971 ft. The well is being drilled to the McClosky at 2,860 ft.

Operations have not yet started at the location staked by Appell & Jones on McFadden Island in the Wabash River. No reports as to when operations will get under way have been received.

INDIANA COMPLETIONS

Gibson County

Mabee O. & G. 3 New Harmony Bank.....SW SW NW 27-3s-14w
Pumped 113 bbl., 2,000 gal. acid, T.D. 2,899 ft., P.B 2,869 ft.
Hall Edwards 17-A Maier.....SW NW SW 13-3s-14w
Pumped 150 bbl., perf. 2,474-94 ft., T.D. 2,825 ft.
Joe Bander et al 41 Cooper.....SW SW NE 13-3s-14w
Pumped 35 bbl., 20-qt. shot 2,482-93 ft., T.D. 2,498 ft.
Continental 23 Bozeman.....SW NW SE 23-3s-14w
Pumped 40 bbl., perf. 2,835-39 ft., 4,000 gal. acid, T.D. 2,937 ft.
Continental 4 Mumford-A.....SW NW NE 25-3s-14w
Pumped 60 bbl., natural, reamed 2,106-40 ft., T.D. 2,610 ft.
Continental 25 Bozeman.....NW SW NE 23-3s-14w
Pumped 240 bbl., 4,000 gal. acid 2,861-73 ft., reamed 2,488-98 ft., T.D. 2,876 ft.
Continental 13 Keck.....SW NW SW 26-3s-14w
Pumped 50 bbl., natural, pay 2,069-2,109 ft. and 2,488-2,510 ft., T.D. 2,608 ft.
Continental 14 Keck.....NW SE SE 27-3s-14w
Pumped 50 bbl., natural, reamed 2,076-2,108 ft. and 2,497-2,512 ft., T.D. 2,610 ft.

Greene County

L. B. Jackson et al 1 Holmes..NW NW NW 22-7n-6w
431,000 cu. ft. gas, pay 1,664-68 ft. and 1,707-12 ft., T.D. 1,765 ft., P.B. 1,727 ft.

Knox County

James Bohannon 1 Carle.....SW SW SE 19-2n-10w
Location abandoned.

Posey County

J. E. Crosbie 8 Keck.....SW SW NE 34-3s-14w
Pumped 20 bbl., perf. 2,810-25 ft. and 2,206-14 ft., T.D. 2,900 ft., P.B. 2,835 ft.

Spencer County

J. C. Ellis et al 1 Spence.....SW NW SE 29-7s-6w
158,000 cu. ft. gas, perf. 675-95 ft., T.D. 1,414 ft.

INDIANA DRILLING REPORT

Crawford County

J. C. Barnett 1 Baylor.....SE SE SW 22-1s-2e
S.D. 1,200 ft.

Gibson County

J. E. Amos 1 Cooper.....NW NW NW 19-3s-13w
Set 10-in. 125 ft., 5-in. 2,075 ft., Waltersburg sand 2,075-94 ft., T.D. 2,094 ft., waiting on cement.
Oleum Pet. Co. 1 Bank.....SE SE NW 5-2s-8w
T.D. 1,536 ft., P.B. 1,216 ft., will shoot show 1,188-1,218 ft.
Hyslop et al 1 fee.....NW NE NW 20-1s-9w
Set 8¼-in. 1,396 ft., T.D. 1,495 ft., fishing pipe.

Greene County

Commonwealth 1 L. L. Tucker... NE SE NE 16-6n-6w
S.D. 1,790 ft.

Knox County

C. L. McGuire 1 Bland.....SE NE SE 15-5n-10w
Rigging up rotary tools.
Midwest et al 2 Frey.....SE SW NW 13-2n-11w
Drilling 1,400 ft.

Martin County

Collier & Birton 1 Swayze.....NW NE NE 10-3n-4w
S.D. 765 ft.

Monroe County

Terry Deskins 1 Kinser.....SW SW NW 34-7n-1e
Location.

Orange County

United States Oil 1 G. E. Willyard NW NE SW 33-1n-1w
Spud 80 ft.

Posey County

Basin Drlg. 1 Oakland City College NE NE SW 16-8s-14w
Aux Vases 2,560-75 ft., Ste. Genevieve 2,575 ft., 1,000 ft. oil, pumping from Aux Vases, no gage, T.D. 2,579 ft.
McCummings et al 1 Oakland City College.....NW NW SE 16-8s-14w
Menard 1,754 ft., Glen Dean 2,058 ft., Barlow 2,295 ft., Aux Vases 2,547-69 ft., set 7-in. 2,537 ft., saturation 2,549-69 ft., T.D. 2,569 ft.
Carter 1 Highman.....SW SE SW 31-5s-13w
Show oil 1,968-79 ft., Menard 2,000 ft., Waltersburg shaled out, Tar Springs 2,194-2,209 ft. (dry), Glen Dean 2,298 ft., Golconda 2,412 ft., Barlow 2,535 ft., Cypress 2,559 ft., Bethel 2,703-37 ft. (dry), Aux Vases 2,781 ft., Ste. Genevieve 2,804 ft., Palestine sand 1,971-79½ ft., 5½ ft. saturated sand, drilling for McClosky 2,860 ft.

Pulaski County

Ray McClure 1 Kocker.....NW NW SW 23-30n-3w
S.D. 360 ft.

Spencer County

Doris McPherson 1 Nichols .... SW NW NW 10-8s-6w
S.D. 1,075 ft.
H. M. Hunt et al 1 Spain..... E½ SE SW 32-7s-6w
S.D. 600 ft.
C. E. Dice 1 Larch.....SW NW SW NW 12-6s-4w
Set 6-in. 740 ft., S.D. 775 ft.

Sullivan County

A. S. Reed et al 1 Coffman.....S½ S½ NE 35-8n-10w
Location.

Vigo County

Sage & Farley 1 Campbell.....S½ NE NW 24-11n-8w
Drilling 1,015 ft.

EASTERN KENTUCKY

ASHLAND, Ky., Feb. 3.—Oil and gas-well completions take the spotlight in eastern Kentucky this week with other operations remaining on the same level. Eleven oil wells, with a combined daily production of 76 bbl. of oil, and three gas wells have been reported completed. The gas wells have a combined production of 549,000 cu. ft. of gas, completed log in.

The oil-well completions are reported from Powell County with the majority on South Fork. One dry hole was listed and a study of other operations indicates other wells are nearing completion level.

Powell County Completions

Jones & McIntosh 1 L. S. Townsend, Tract 2, on South Fork, 15 bbl. at 840 ft.

J. W. Wireman 4 Albert Stewart, on South Fork, 4 bbl. at 800 ft.

Arthur E. Wireman 7 E. A. Wireman, on South Fork, 10 bbl. at 860 ft., and No. 8, same tract, 12 bbl.

Lyle & Kinser Brothers 7 Kinser heirs, on South Fork, 5 bbl., at 900 ft.

Adkins Brothers 1 E. C. Grear et al, on South Fork, 3 bbl. at 863 ft. Same operators 2, same farm, 5 bbl. at 863 ft.

Agatha Wireman 4 Robert Boyd, on South Fork, 8 bbl. at 840 ft.

Bruer & West 6 George A. Faulkner, on South Fork, 6 bbl. at 800 ft.

Evans Oil & Gas Co. 2 B. F. Creech, on Miller Creek,

(Continued on Page 77)

New Production Being Sought Chiefly in Older Oil Areas

By ROBERT INGRAM

OLDER producing areas, which operators have been working over with a fine-toothed comb, continued to make news this week. The new Seminole district pool, opened in the Booch sand by Weldon W. Hall in 1 Jackson, N½ NE SE 14-7-7, had a second test location announced at 1 McKenzie, SE SE NE 14-7-7. This well will also be drilled by Hall.

The discovery well is midway between the East Little River and Fish pools in the southern part of the county. Booch sand was found at 3,168 ft., and the hole drilled to 3,189 ft. Fluid rose 1,500 ft. and on a swabbing test it made 60 bbl. in 12 hours. Later it swabbed 96 bbl. in 24 hours. Offsetting the discovery is a dry hole drilled in 1926 which was put down to the Wilcox at 4,721 ft.

Northwest of the Little River area W. A. Delaney and Atlantic Refining Co. completed 1 Clark, NE NE SE 30-8-7, a wildcat, for 364 bbl. on a 24-hour test through casing and tubing. The well was pinched to 7⅛ bbl. an hour. Production is from the Wilcox sand at 4,272-89 ft., and pipe was set at 4,272 ft. Delaney and Atlantic hold 720 acres of leases around the well, but there are deep dry holes within ½ mile of the discovery on the north, northeast, and south.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Cumberland	1	162	5,091
Hewitt	4	365	9,123
Dill	1	268	3,674
Other fields	11	1,481	35,396
Wildcats	2	144	5,783
Dry holes: Hewitt	1	.....	2,505
Other fields	2	.....	5,231
Gas wells: Fields	4	*21.5	13,482
Total	26	.....	80,285
Recompletions	1	34	.....

*Million cu. ft.

Cement.—Meantime interest was revived in townsite development at Cement in Caddo County after Magnolia Petroleum Co. 10 Surbeck, NW SE SE 3-5-9w, had good production from the Rose sand at 3,324-40 ft. Operators set pipe at 3,312 ft., and after the plug was drilled the well flowed 249 bbl. in 12 hours through tubing. Offset wells on the same lease are producing from shallower depths.

About two locations from 10 Rowe, Lacy Rollins and associates were reported to be planning another test on Block 59 of the townsite. There is a 2,408-ft. oil well on the northwest corner of the block, while in the southwest corner there is a 3,305-ft. dry hole.

Big Gasser Is Tested

Another older area being reworked was the Chickasha gas field of Grady County which has been an important gas-producing area for the Oklahoma Natural Gas Co. for many years. At week's end work was under way on a dozen wells, including the Oklahoma Natural 1-B Sanford, W½ NW SW 23-5-8w, completed last fall but still being tested and claimed by some as the largest gas well ever completed in the United States.

Gas-company engineers would give no estimate of the well's potential but admitted it was "big." Engineers for the U. S. Bureau of Mines made a "back-pressure" test, but had not officially confirmed reports current this week that it was capable of producing 440,000,000 cu. ft. a day.

The field was revived a year ago when Carter 1 Smith C-58, SE SW 26-5-8w, was completed in the so-called Charlson sand of the Deese section at 5,330-50 ft. Limits of the deep zone have not been defined, and extensive drilling in the area is expected to continue. It was doubtful that operators would attempt to go below the Deese, however, as the Carter well was reported to have gone into steep dips at around 6,600 ft. The discovery had been planned as an 8,000-ft. test.

Dill Pool Hearings

Hearing was set for February 8 by the state Corporation Commission on petition of Shell Oil Co., Inc., for extending the boundaries designated in a well-spacing order for the Dill pool of Okfuskee County, one of the outstanding 1940 extensions. Shell asked that all of Sections 26 and 27-12-8 on the north end of the trend be included because of its belief that the Cromwell sand production will be found in these two sections. The original order, issued last spring, fixed 10-acre spacing for all of Section 34 and SW and NW 35-12-8, and N½ NW and SW NW and W½ SW of Section 2, all of Section 3, and NE and NW of Section 10, and W½ NW 11-11-8.

The commission also granted a petition of M. W. Lee and H. E. Lee for an exception to the 10-acre spacing for the Dill pool on a well being started in NE NW 35-12-8. Evidence showed that a fault cuts through the lease, and operators sought to move their locations to within 100 ft. of the west line of the lease —220 ft. off center of the 10-acre unit—to avoid missing production. Other operators in the field opposed the change.

Okfuskee.—Skelly Oil Co. announced that it has staked location for 1 Lewis Wesley, SW SW NW 21-11-9, southwest of Okemah in Okfuskee County, ¼ mile due east of the Deep Rock et al 1 Davis which opened production in the Hunton lime for both gas and distillate a few weeks ago.

Roger Mills.—In the western part of the state Willie and Joe Anderson spudded 1 Purcell, NW SE 9-13-26w, west of Rankin. While the test is a rank wildcat, Anderson drilled to 2,200 ft. ½ mile north of the new location in 1922 and found good saturation before abandoning the hole.

Creek.—In Creek County two wildcats were nearing the payoff stage. They were Bryan Petroleum et al 1-A Deere, NE SE NE 34-17-7, a deep test in the West Arno pool, and Leader Oil (formerly W. I. Southern, Inc.) 1 Vernon, NE SE NW 30-19-8, east of Oilton. The Bryan well had Wilcox sand at 3,964 ft., cored to 3,971 ft., and found saturation, and has cemented casing at 3,939 ft. The Leader well was drilling below 3,445 ft., looking for the Arbuckle.

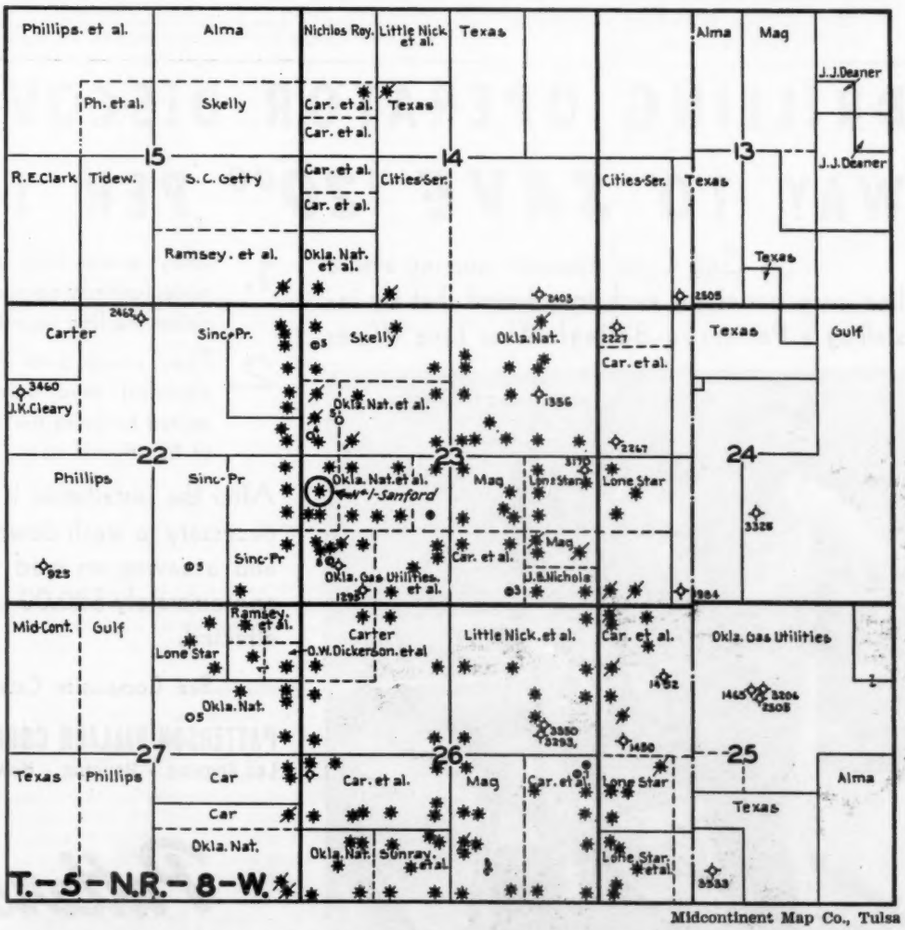
OKLAHOMA COMPLETIONS

Caddo County

Cement field: Stephens 1 Kidd, SW NW NE 27-6-10w, pumped 15 bbl., sand 3,498 ft., T.D. 3,523 ft., casing 3,498 ft.

Bryan-Marshall Counties

Cumberland: Pure 2 Little 201, SW SE SE 28-5s-7e.



Midcontinent Map Co., Tulsa

Development of the Charlson gas pay in the Chickasha gas field of Grady County resulted in completion of a big producer by Oklahoma Natural Gas Co. in 1-B Sanford, W½ NW SW 23-5-8w, which was hailed by some as the biggest gas well ever completed in this country. The big well is circled on the map, and drilling wells are indicated

swabbed 162 bbl., 24 per cent b.s., 17 per cent water, sand 4,868-78 ft., casing 4,920 ft., sand 5,040 ft., T.D. 5,091 ft.

Carter County

Hewitt pool: Batson 1 Dillard, SE NW SE 10-4s-2w, dry, T.D. 2,505 ft.
Batson 1 Franklin, SW NW SE 10-4s-2w, pumped 33 bbl., casing 1,989 ft., T.D. 2,018 ft.
Carter 8 Vorhees, SE NW SW 21-4s-2w, pumped 42 bbl., T.D. 2,393 ft., P.B. 2,304 ft., casing 2,348 ft., perf. 2,245-75 ft.
Carter 9 Vorhees, SE NW SW 21-4s-2w, pumped 228 bbl., T.D. 2,307 ft., casing 2,268 ft., perf. 2,180-99 ft.
O'Conner 1 Patterson, NW SE SW 21-4s-2w, pumped 62½ bbl., T.D. 2,820 ft., P.B. 2,425 ft., casing 2,389 ft., P.B. 2,423 ft., shot 2,405-23 ft.

Creek County

East Stroud pool: Berry 1 Linihan, SE NE NE 31-15-7, flowed 353 bbl., casing 4,035 ft., shot second Wilcox 4,084-4,120 ft., T.D. 4,120 ft.
Bristow area: Stekoll 1-A Barnsdall, SW NE SW 13-16-9, dry, T.D. 3,282 ft. in Wilcox.
Bruce pool: NE NW SW 3-17-9, Jackson 2 Hope, pumped 25 bbl., casing 2,030 ft., Prue 2,038-61 ft., T.D. 2,061 ft., P.B. 2,060 ft., shot 2,034-60 ft.
Slick area: Briggs 1 Jones, NE NW 29-16-10, pumped 16 bbl. oil, 10 bbl. water, Dutcher 2,865-92 ft., T.D., shot 2,865-87 ft.

Latimer County

Wilburton field: Limestone 2-A Kirkpatrick, SE NW SE 16-5-18, 500,000 cu. ft. gas, 500 lb. R.P., casing 2,718 ft., sand 2,765 ft., sandy limestone 2,785-2,810 ft., T.D. 2,828 ft.
Norris field: Le Flore 39 McFerren, NE SW SW 2-6-22, 3,000,000 cu. ft. gas, 325 lb. R.P., casing 315 ft., sand 1,480-1,692 ft., T.D. 1,704 ft., P.B. 1,692 ft., shot 1,489-1,692 ft.

Lincoln County

Laffoon pool: Kerlyn 1 Froug, SE NW NW 2-13-6, pumped 75 bbl., Wilcox 4,238-44 ft., T.D., casing 4,195 ft.
Underwood 1 Thomas, NW SW 10-13-6, 12,000,000 cu. ft. gas, 1,175 lb. R.P., casing 4,090 ft., Huntor 4,089 ft., T.D. 4,092 ft.

Logan County

Lovell pool: H. P. Gas \ Harmon, SE SE 33-18-4w, 6,000,000 cu. ft. gas and some water, casing 4,829 ft., T.D. 4,863 ft., middle Layton 4,806-4,858 ft.

Okfuskee County

Sylvian pool: Sunray 2 Replogle, SE SW SE 35-11-8, flowed 277 bbl., Cromwell 3,469-85 ft., T.D., casing 3,469 ft., shot.
Dill pool: Phillips 1 Miller, SE NE NE 34-12-8, flowed 268 bbl., ¼-in. choke, T.D. 3,674 ft., shot 3,641-74 ft., Cromwell 3,629 ft.
Wildcat: Phillips 1 Jamie, SE SW 2-11-10, flowed 24 bbl., T.D. 3,241 ft., Pitkin, P.B. 3,195 ft., shot 3,188-95 ft. sand.

Noble County

Wildcat: Graph 1 Palecak, SW SE 22-24-1w, location abandoned.

Pawnee County

Mannford district: Brady 3 Bellis, SE NE SE 28-20-9, pumped 8 bbl. oil and 2 bbl. water, Wilcox 2,724-28 ft., T.D.

Payne County

Orlando pool: McClelland 1 Francis, SW NW 4-19-1w, location abandoned.

Pontotoc County

Bebee pool: Criswell 1 Dixon, NW NE 33-5-5, pumped 5 bbl., Hunton 2,164 ft., casing 2,165 ft., Viola 2,442 ft., T.D. 2,533 ft., acid 2,500 ft.
North Bebee pool: Oils, Inc. 1 Walker, NE SW 9-5-5, pumped 200 bbl., Viola 2,655 ft., casing 2,619 ft., T.D. 2,701 ft., perf. Hunton and acid.

Pottawatomie County

Wildcat: Simpson 1 James, SW SE SE 9-5-3, old well, old T.D. 3,650 ft., casing 3,500 ft., Layton 2,636-45 ft., P.B. 3,405 ft., perf. 3,200-12 ft., est. 3 bbl., P.B. 2,720 ft., pumped 34 bbl.

Seminole County

East Earlsboro pool: Stanolind 1 Baird, SE SW NW 15-9-6, flowed 42 bbl., Senora sand 2,888 ft., casing 2,890 ft., T.D. 2,912 ft., shot 2,900-10 ft.
West Seminole pool: Amerada 1 Karr, N½ SE SW 30-9-6, flowed 465 bbl. and 2,750,000 cu. ft. gas, Viola, 4,108 ft., casing 4,128 ft., Wilcox 4,225 ft., T.D. 4,267 ft.
Wildcat: SW NW NE 33-9-6, Dunnett 1 Duncan, flowed 120 bbl., 11/64-in. choke, Calvin 2,525 ft., casing 2,525 ft., T.D. 2,542 ft.

Tulsa County

Keystone area: Swift 1 Bell, SE NW 14-19-10, dry, T.D. 1,949 ft. in Bartlesville.

OKLAHOMA DRILLING REPORT

Carter County

Wirt Franklin 1 Ribbenhouse ..... SE NE SE 5-4s-2w
Drilling 1,535 ft. shale.

Comanche County

Hamblen-Good 1 Phillips ..... NE NE NW 34-1-13w
S.D. 322 ft.

Creek County

R. R. Kirchmer et al 1 Carson ..... NE SE NW 23-17-9
Drilling 3,136 ft. in Mississippi lime.
Ray Starr 1-A Lumm ..... SE NW SE 8-14-8
9⅝-in. 120 ft., drilling 1,590 ft.
Link 1 Kinch ..... NE SW NE 25-16-7
15-in. 457 ft., drilling 720 ft.

Hughes County

Mid-Continent et al 1 J. Davis ..... SE SE NW 15-6-8
10-in. 112 ft., drilling 1,505 ft.
Magnolia 1 McKoy ..... SW SW SE 16-5-11
Pennsylvanian Caney 6,065 ft., Mississippian Caney 6,160 ft., Mayes 6,400 ft., Woodford 6,547 ft., Hunton 6,674 ft., Sylvan 6,682 ft., Viola 6,739 ft., cored 6,678-79 ft. chert lime, cored 6,745-53 ft., Viola lime, no shows, reaming.

Jackson County

Burke 1 Estes ..... SW SW NE 34-3-19w
S.D. 1,070 ft.

Jefferson County

Hampton-Stelley 1 Pealor ..... NW NE NW 33-7s-6w
S.D. 700 ft.

Kay County

Earl Williams 1-A Trueblood .. SW NE SE SE 25-25-1w
Drilled by one string fishing tools on bottom, to set 6-in. before drilling deeper.
Marland et al 1 Kreger ..... SE SE NE 4-25-2w
Tonkawa 2,685-2,717 ft., Layton 3,457-3,584 ft., sand 3,590 ft., S.D. 3,603 ft.
Union Oil & Gas 1 Long (old well) NW NW NW 29-28-1
Drilled out to old T.D. 3,377 ft., 5-in. liner on top sand, to drill 6 in. deeper and complete in Wilcox at 3,375 ft.
Continental 1 Cronan ..... NW NE SW 23-28-3
Cored 2,940-92 ft., stained sand with good odor, Skinner 2,955-84 ft., Mississippi chert 3,126 ft., T.D. 3,176 ft., electric log, to run pipe and test Skinner.

Kiowa County

Artie Baker 1 Coakley ..... NW NE SE 30-7-17w
Show free oil, drilling 1,283 ft.

Lincoln County

K. G. F. F. 1 Adams ..... SW NW NW 3-14-4
Mayes 4,510 ft., Woodford 4,747 ft., Hunton 4,795 ft., odor, Sylvan 4,845 ft., dense 4,965 ft., dolomite 4,980 ft., Wilcox 5,005 ft., second Wilcox 5,045 ft., T.D. 5,059 ft., sandy dolomite, electric log, S.D.
Mid-Continent et al 1 School Land NW NE NW 36-12-3
Cherokee brown lime 4,750 ft., brown lime 4,885 ft., ft., Caney 4,960 ft., Mayes 5,060 ft., drilling 5,123 ft.

Logan County

Big Chief & Ellison 1 Strange ..... SW SE 27-18-4w
Cement off perf. in Avant 4,266 ft., and perf. Elgin 3,151-56 ft., show gas and lots of water, S.D., T.D. 5,127 ft.
Hamilton & Fain 1 Donoghue ..... NW SE 7-17-1w
Burlingame 2,000 ft., Deer Creek 2,265 ft., Oread 2,850 ft., Avant 3,528-50 ft., Avant Dewey 3,570-3,658 ft., Perry gas sand 3,658-62 ft., drilling 3,805 ft., well checking high and thinning.

Love County

Colvin & Hicks 2 Westheimer 2 Daube ..... W½ SE SW 27-6s-2e
Lime 3,002-11 ft., sandy lime 2,011-18 ft., T.D.

Noble County

Elson & Hudson 1-A Conway ..... NE NE NE 1-23-2w
Tonkawa 2,630 ft., Avant 3,270 ft., Layton 3,572 ft., Hogshooter 3,695 ft., Oswego 4,075 ft., stain 4,370-90 ft. Mississippi lime 4,550 ft., drilling 4,706 ft.

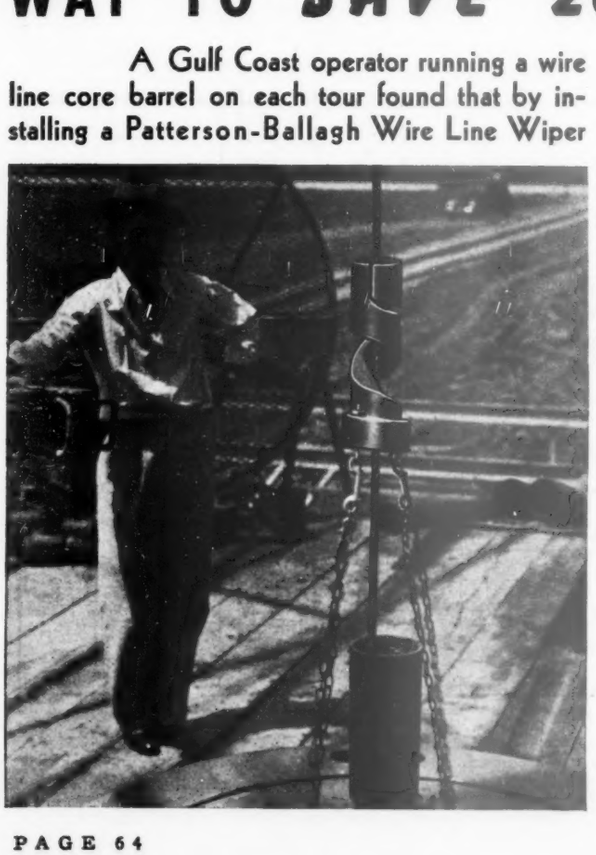
Okfuskee County

Hayes et al 1 McKernan ..... E½ SE NW 25-12-8

(Continued on Page 84)

DRILLING OPERATOR DISCOVERS WAY TO *SAVE* $20.00 PER TRIP

A Gulf Coast operator running a wire line core barrel on each tour found that by installing a Patterson-Ballagh Wire Line Wiper

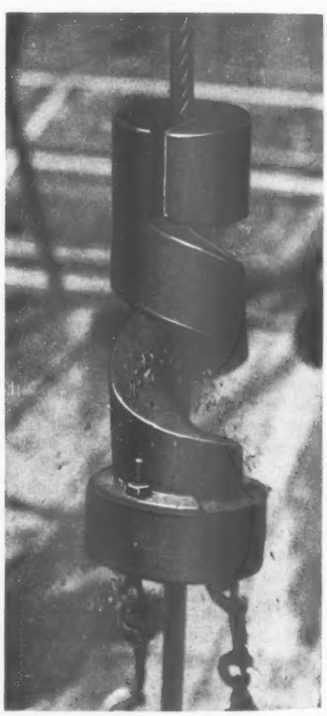


1. They saved 150 gallons of water formerly needed to wash down the line each trip.
2. They saved 5 to 7 sacks of chemical mud formerly required to bring the mud back to its original state.

After the installation it was unnecessary to wash down the line and a saving on mud equal to approximately $20.00 a trip was effected.

See Composite Catalog

PATTERSON-BALLAGH CORPORATION
Los Angeles - Houston - New York City



Patterson-Ballagh
WIRE LINE WIPER

Inglewood Deep Sand May Start Town-Lot Campaign

By L. P. STOCKMAN

LOS ANGELES, Calif., Feb. 3.—Overshadowing all other developments in California during the past week was the starting of production tests on two promising wildcats and preparations to test out Bush 1 Smith of R. R. Bush Oil Co. in the northern end of the Inglewood field. If these production tests proceed according to schedule, the status of these wells should be determined within another several days. In the Union Avenue area, Hancock 1 Roberts is on the beam but it was still pumping to sump at the close of the week. This well appears to be good for about 100 bbl. per day but completion is being held in abeyance until the production cleans up and the well indicates its capacity to maintain steady production. Western Gulf 1 Lechler, which is located in Oak Canyon on the Hasley anticline in western Los Angeles County, failed to respond to persistent bailing and swabbing operations during the week and the company is installing pumping equipment. Both of these wildcats show indications of resulting in small production on the beam.

Inglewood.—Bush 1 Smith,, an outpost in the northern end of the Inglewood field of Los Angeles Basin has shown exceptional promise and is expected to result in large production. This well is bottomed in a good looking oil sand in the Sentous zone at a high structural position and if the high gas pressure encountered during the past fortnight is any criterion we may anticipate completion of a large flowing well. This deep test, which is bottomed in the pay at 7,996 ft., has shown so much promise that R. R. Bush Oil Co. which is drilling the well has already staked location for 1 Merchants on an adjoining lease. The probability that deeper production could be expected in the Inglewood field was indicated late in 1940 when R. R. Bush Oil Co. drilled and completed 1 Sentous in the southern end of the field. Standard Oil Co. started an offset to 1 Sentous a few months ago but this well, 3-1 Los Angeles Investment, is already deeper than the discovery and has not yet been finished. It is at present in a hard shale with streaks of tight oil sand at 9,010 ft. If substantial production is developed around the edge of the field other operators holding acreage nearer the apex of the structure will be obliged to engage in deep-zone exploitation as a protective measure. If aggressive deep-zone exploitation gets under way soon in the Inglewood field we may anticipate the drilling of about 100 wells during the current year. The outcome of work on Bush 1 Smith will bear watching because this field may prove to be an active one in the near future.

Paloma

The proposal to unify drilling and production activities in the Paloma field of Kern County is meeting with general approval and it appears quite probable that final approval will be secured from all concerned as soon as preliminary engineering principles have been worked out. The plan of development for this field is radically different from that in force at Kettleman North Dome although unification of activities is contemplated. It is generally agreed that some form of unit operation must be adopted in order to (1) produce at the maximum rate with the greatest efficiency, (2) reduce development costs to a reasonable amount, and (3) provide a means of maintaining uniform pressures and withdrawals. Fortunately the landowners in this field recognize the inherent advantages accruing to efficient operation of a distillate field and the necessity of maintaining the reservoir pressure as close as possible to the original pressure.

For the past several weeks, Western Gulf Oil Co. and other operators interested in the Paloma field have been puzzled by an oil sand logged above the Stevens oil zone at 10,270-10,534 ft. The finding of this zone in 12-12-B Kern County Land about 1 mile east of the nearest production tended to indicate the existence of two productive zones in the Paloma field especially inasmuch as this new top zone was about the chert marker that overlies the Stevens oil sand. Western Gulf exploded this possibility late this week by taking an electric log and found the new zone to be the Stevens zone. The chert marker apparently pinches out before reaching the 12-12-B Kern County Land.

Greeley—Rio Bravo

Wilshire Oil Co. extended the productive limits of the Greeley field to the northwest and narrowed the distance between the Greeley and Rio Bravo fields by completing 1 Campen in 1-29s-25e flowing 2,500 bbl. of relatively clean 36.4-gravity oil per day from the Vedder zone with bottom of the hole at 11,500 ft. The Rio Bravo zone which overlies the productive Vedder in the Rio Bravo field was absent in 1 Campen and thus this well shows the predominating characteristics of wells in the Greeley field rather than those in the Rio Bravo field where both the Rio Bravo and Vedder zones are highly productive. It is interesting to note in this connection that the outer limits in the northern end of the Greeley field and the southern limits of the Rio Bravo field are still open thus indicating a possibility that these two fields might join.

If the Rio Bravo and Greeley fields do not actually join we may expect a fault between the two structures. While Wilshire Oil Co. was extending the productive limits of the Greeley field, Union Oil Co. was doing likewise at Rio Bravo. The latter's 41-33 Pacific States in 33-28s-25e which was completed flowing 1,550 bbl. of very clean 39.9-gravity oil and 2,000,000 cu. ft. of gas per day from the Rio Bravo and Vedder zones at 11,506 ft. extended the western limits of production in the southern end of the structure. Union Oil Co. has been establishing some fine drilling records in the Rio Bravo field and now holds the record for speed with safety. Recently the company completed a Vedder zone well in 34 days from spud to completion and this week established a record of drilling 10,000 ft. of hole in a little over 16 days. These records were made with standard equipment. It is interesting to note that only three dry holes have been drilled in the Rio Bravo field since its discovery but the productive limits appear to be well defined in all directions except to the west. Superior Oil Co. drilled a duster in the southeastern end of the structure and another in the northwestern end of the field and accordingly limited the productive acreage. Union Oil Co. drilled a duster on the north flank of the structure east of Superior's northwestern outpost.

Coalinga

Standard Oil Co. is expected definitely to determine within the next 60 days whether Northeast and Southeast Coalinga are one long field or two separate accumulations. It has been assumed, because of differing production characteristics and other unlike tendencies, that the fields are separate. Southeast Coalinga is characterized by a large thickness of porous oil sand which results in large production of crude oil and a comparatively small amount of natural gas. Northeast Coalinga on the other hand contains a high pressure gas cap and produces at a much higher gas-oil ratio. Contours based on the top of the Gatchell zone in both areas appear to be bending around in the area between the two productive areas and may meet unless something happens in the intervening territory. The distance between the southern end of the Northeast Coalinga field and the northern end of the Southeast Coalinga field is less than 1 mile. Standard Oil Co. early this week staked location for 48-31-B fee in 31-19s-16e and material will be delivered to the location within the next week. This well will be drilled north of Superior's Cagle lease on which several excellent flowing wells have been finished.

Coles Levee—Tupman

Richfield Oil Corp. has effected a substantial reduction in drilling operations in the Coles Levee and Tupman fields of Kern County and in contrast with conditions prevailing a few months ago when the company was running 16 strings of tools simultaneously these are only eight wells drilling at present. One of the surprises in the Coles Levee field was the coring of Stevens oil sand by Union Oil Co. in 52-2 Kern County Land in 2-31s-25e at 9,472 ft. and the thickness of oil sand cored will result in completion of a good well within the next week or 10 days.

Kettleman Hills.—Standard Oil Co. has a water problem on its hands in the Kettleman North Dome field as 1-1-U fee in the extreme eastern end of the structure in 1-23s-16e flowed 4,000 bbl. of salt water on a test of the Eocene at 10,968 ft. There is a possibility that this water may be coming from around the shoe of the 6⅝-in. water string that has been cemented at 10,865 ft.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: San Joaquin Valley	11	19,336	104,780
Coastal district	4	4,482	45,236
Los Angeles Basin	10	6,895	29,228
Dry holes: Coastal district	1	.....	3,130
Los Angeles Basin	1	.....	2,360
Total	27	.....	184,734

SAN JOAQUIN VALLEY COMPLETIONS

Coalinga Northeast Field

Getty & Pac. West. 2 Coalinga Comm. 30-19s-16e
Flowed 1,023 bbl., 26.9-gravity, 0.7 per cent cut, 620,000 cu. ft. gas. 12/64-in. bean. Pressures 1,150/1,220 ft. Elev. 665 ft. T.D. 8,250 ft. 7-in. water string 8,073 ft. 200 ft. 5-in. liner 8,245 ft. 100-mesh perf. 8,086-8,245 ft. 8,005 ft. 2⅞-in. tubing. 68 days drilling time. Productive Gatchell 8,090-8,250 ft. Fresno County.

Pure Oil Co. 2 Coalinga 30-19s-16e
Flowed 1,594 bbl., 28.2-gravity, 0.4 per cent cut, 668,000 cu. ft. gas. 16/64-in. bean. Pressures 1,170/1,200 lb. Elev. 687 ft. T.D. 8,289 ft. 7-in. water string 8,150 ft. 166 ft. 4¾-in. liner 8,289 ft. 100-mesh perf. 8,175-8,289 ft. 8,265 ft. 2-in. tubing. 84 days drilling time. Gatchell zone 8,177-8,289 ft.

Coalinga Southeast Field

R. S. Lytle 46-7-F 7-20s-16e
Flowed 2,399 bbl., 32.3-gravity, 1.1 per cent cut, 1,445,000 cu. ft. gas. 27/64-in. bean. Pressures 1,125/1,365 lb. Elev. 773 ft. T.D. 7,522 ft. 8⅝-in. water string 6,967 ft. 595 ft. 6⅝-in. liner 7,522 ft. 100-mesh perf. 7,005-7,552 ft. 7,476 ft. 2½-in. tubing. 41 days drilling time. Gatchell zone 6,970-7,514 ft. Bottomed in silt. Fresno County.

Greeley Field

Wilshire Oil Co. 1 Campen 1-29s-25e
Flowed 2,500 bbl., 36.4-gravity, 2 per cent cut, 2,600,000 cu. ft. gas. 23/64-in. bean. Shut-in pressures 1,400/1,400 lb. Elev. 337 ft. T.D. 11,500 ft. 7-in. water string 11,366 ft. 120 ft. 4-in. liner 11,500 ft. Perf. 11,380-11,500 ft. 11,306 ft 2½-in. tubing. 171 ft. of 5⅛-in. liner 11,405 ft. Perf. 11,274-11,405 ft. Vedder zone 11,370-11,500 ft. 85 days drilling time. Kern County.

Superior 1 Griffith 1-29s-25e
Flowed 1,545 bbl., 36.4-gravity, 0.1 per cent cut, 1,850,000 cu. ft. gas. 32/64-in. bean. Pressures 1,425/1,500 lb. Elev. 337 ft. T.D. 11,490 ft. 7⅝-in. water string 11,352 ft. 159 ft. 4¾-in. liner 11,490 ft. 120-mesh perf. 11,352-11,490 ft. 10,995 ft. 2½-in. tubing. 46 days drilling time. Rio Bravo zone 11,352 ft., Vedder zone 11,414-90 ft.

Rio Bravo Field

Superior 2 Mandell 27-28s-25e
Flowed 1,540 bbl., 38.4-gravity, 0.6 per cent cut, 2,020,000 cu. ft. gas. ½-in. bean. Pressures 1,325/1,350 lb. Elev. 337 ft. T.D. 11,463 ft. 7⅝-in. water string 11,254 ft. 228 ft. 5¾-in. liner 11,461 ft. 120-mesh perf. 11,254-11,461 ft. 2½-in. tubing. 43 days total drilling time. Productive Rio Bravo zone 11,254 ft., Vedder zone 11,343-11,463 ft.

Union 41-33 Pacific States 33-28s-25e
Flowed 1,550 bbl., 39.9-gravity, 0.5 per cent cut, 2,000,000 cu. ft. gas. 32/64-in. bean. Pressures 1,325/1,700 lb. Elev. 331 ft. T.D. 11,506 ft. 7-in. water string 11,398 ft. 126 ft. 5-in. liner 11,504 ft. 11,180 ft. 2½-in. tubing. 51 days drilling time. Rio Bravo zone 11,376 ft., Vedder zone 11,450-11,506 ft.

Ten Section Field

Shell 54-30-A Kern County Land 30-30s-26e
Flowed 1,860 bbl., 34.5-gravity, 0.1 per cent cut, 2,029,000 cu. ft. gas. 128/64-in. bean. Pressures 150/1,500 lb. Elev. 328 ft. T.D. 8,200 ft. 4½-in. combination string 8,196 ft. Perf. 7,999-8,196 ft. 7,986 ft. 2-in. tubing. Drilled by slim-hole method in 25 days. Completed in Stevens zone. Kern County.

Shell 67-29-A Kern County Land 29-30s-26e
Flowed 1,965 bbl., 33.2-gravity, 0.1 per cent cut, 1,602,000 cu. ft. gas. 128/64-in. bean. Pressures 150/1,050 lb. Elev. 333 ft. T.D. 8,220 ft. 4½-in. combination string 8,216 ft. Perf. 8,076-8,135 ft., 8,145-90 ft., 8,206-16 ft. 8,048 ft. 2-in. tubing. Drilled by slim-hole method in 24 days. Stevens zone 7,900-8,220 ft.

Tupman Field

Richfield 45-29-A Kern County Land 29-30s-25e
Flowed 1,920 bbl., 34.5-gravity, 1.4 per cent cut, 1,330,000 cu. ft. gas. Two 1½-in. beans. Pressures 150/350 lb. Elev. 310 ft. T.D. 9,300 ft. 8⅝-in. water string 8,693 ft. 658 ft. 6⅝-in. liner 9,295 ft. Perf. 8,800-50 ft., 8,895-9,295 ft. 9,261 ft. 2½-in. tubing. Completed in upper and lower Stevens zone of Miocene age. 88 days drilling time. First oil sand 8,534 ft. Kern County.

Richfield 14-32-A Kern County Land 32-30s-25e
Flowed 1,440 bbl., 33.5-gravity, 1.5 per cent cut, 995,000 cu. ft. gas. Two 1½-in. beans. Pressures 100/650 lb. Elev. 329 ft. T.D. 9,040 ft. P.B. 8,970 ft. 8⅝-in. water string 8,173 ft. 826 ft. 6⅝-in. liner 8,935 ft. Perf. 8,600-80 ft., 8,725-8,935 ft. 8,920 ft. 2½-in. tubing. Upper Stevens oil sand 8,202 ft. Bottomed in gray sand but plugged back to bottom of lower Stevens oil sand. 65 days drilling time.

SAN JOAQUIN VALLEY OUTPOSTS

Coles Levee Field

Standard 20-8 Kern County Land 5-31s-25e
T.D. 9,161 ft. in Stevens oil sand and shale. Top oil sand 8,890 ft. 8⅝-in. casing 8,880 ft. Kern County.

Standard 20-9 Kern County Land 9-31s-25e
Derrick.

Union 58-2 Kern County Land 2-31s-25e
T.D. 9,925 ft. in Stevens oil sand. Top oil sand 9,472 ft.

Elk Hills Field

Standard 42-31-S 31-30s-24e
Drilling 5,170 ft. in sand and shale. Kern County.

Standard 44-29-S 29-30s-24e
Drilling 730 ft. in surface sand. Elev. 866 ft. Located east end of Hay section.

Kettleman North Dome Field

Standard 1-1-U fee 1-23s-16e
T.D. 10,968 ft. Flowed 4,000 bbl. salt water. Recemented 6⅝-in. casing 10,865 ft. Kings County.

Midway-Sunset Field

No. Amer. Oil Consd. 1-28 W.P. 28-32s-23e
Drilling 5,232 ft. Kern County.

Paloma Field

Western Gulf 12-12-B Kern County Land 12-32s-26e
T.D. 10,534 ft. in oil sand. This is new oil zone. Completing. Still above the chert which occurs above productive Stevens zone. Cored good looking oil sand and shale 10,270-10,396 ft. This is first time this oil sand has been cored at Paloma. About 1 mi. SE of discovery well. Kern County.

Strand Field

Associated 25-7-E Kern County Land 7-30s-26e
Drilling at 11,590 ft. in gray sand. Top of sand at 11,510 ft. may be Olcese. Kern County.

Wheeler Ridge Field

Richfield 2 Kern County Land 28-11n-20w
Drilling 11,550 ft. in shale and gray sand. Kern County.

SAN JOAQUIN VALLEY WILDCATS

Cantua Creek District

Texas 27-13 Southern Pacific 13-17s-15e
Drilling 4,987 ft. in sand and shale. Fresno County.

Buena Vista Hills District

Honolulu 25-P fee 10-32s-24e
Drilling 12,060 ft. in shale with streaks of hard sand. Kern County.

Buttonwillow District

Texas 47-15 Southern Pacific 15-29s-24e
Drilling 4,974 ft. in sand and shale. Kern County.

Tejon District

Richfield 1 Tejon ranch 2-10s-19e
Drilling 9,976 ft. in gray sand and shale.

LOS ANGELES BASIN

Hellman estate completed an excellent flowing well in the Seal Beach field of Los Angeles Basin during the current week and this new well may prove of more importance than is apparent on the surface. This new producer was well No. 6 and it was brought in flowing 1,080 bbl. of relatively clean 27.3-gravity oil and 1,500,000 cu. ft. of natural gas per day from the lower Wasem zone of Miocene age at 5,670 ft. It is located north of the Seal Beach fault and is one of the few wells that have been finished north of the fault. There is some question whether commercial production can be found in other parts of the field north of the fault or whether this accumulation is restricted to a small area in the extreme eastern end of the structure. In order to determine definitely existing conditions, Continental Oil Co., discoverer of the Seal Beach field and largest operator in the district, has erected a derrick for 46 Bixby which will be drilled 530 ft. north and 1,190 ft. west of the S¼ cor. 2-5s-12w. This location places the well north of the Seal Beach fault and if Continental Oil Co. succeeds in developing production it will greatly increase the company's reserve in the Seal Beach field and obviously enlarge the productive acreage.

Long Beach

Union Oil Co. has landed casing over the Dormax zone in the Long Beach field and is scheduled to make a production test of 19 Long Beach Community, a deep test, before the close of another week. This well has found the Dormax zone a little lower structurally than expected and the oil sand is tight with low porosity and permeability. As the company has cored about 260 ft. of oil sand there is a good possibility that there may be enough porous sand at several points in the formation to offset the tight condition of the remainder. Three previous completions in the Dormax zone failed to result in a natural flow and they were all put on the beam or gas lift. The average production of these wells initially was around 250 bbl. per day with little gas.

Athens-Rosecrans

Universal Consolidated Oil Co. 8 Trust in the Rosecrans field, according to drill-pipe count, is at about 9,250 ft. Tubing was hauled in a few days ago which indicates that they have found something justifying a production test. The O'Dea zone is the deepest producing horizon in this field at present and if a new productive zone is found it will be topped about 1,000 ft. below the top of the O'Dea zone.

LOS ANGELES BASIN COMPLETIONS

Dominguez Field

Shell 109 Reyes 34-3s-13w
Flowed 142 bbl., 31.5-gravity, 8 per cent cut, 373,000 cu. ft. gas. 24/64-in. bean. Pressures 150/350 lb. Elev. 192 ft. T.D. 7,494 ft. P.B. 7,150 ft. 7-in. water string 7,255 ft. 108 ft. 5½-in. liner 7,336 ft. 7-in. casing perf. 5,796-5,850 ft., 5,870-6,037 ft., 6,070-6,187 ft., 6,200-63 ft. 65 days drilling time. Los Angeles County.

East Coyote Field

Bartholomae Oil Corp. 4 Sterns 22-3s-10w
Pumped 440 bbl., 25.1-gravity. Elev. 320 ft. T.D. 7,105 ft. 8⅝-in. water string 5,055 ft. 2,130 ft. 5½-in. liner 7,100 ft. Perf. 6,010-6,230 ft., 6,260-6,730 ft., 6,817-87 ft., 7,010-80 ft. 4,990 ft. 2½-in. tubing. Deepened from 5,056 ft. to Stern zone at 7,105 ft. Orange County.

Huntington Beach Field

Signal O. & G. Co. 21 Bolsa 34-5s-11w
Flowed 269 bbl., 29.1-gravity, 2 per cent cut, 3,620,000 cu. ft. gas. 47/64-in. bean. Pressures 360/625 lb. Elev. 14 ft. T.D. 3,235 ft. P.B. 3,000 ft. 8⅝-in. water string 2,585 ft. 436 ft. 6⅝-in. liner 3,000 ft. Perf. 2,583-3,000 ft. 2,959 ft. 2½-in. tubing. Com-

(Continued on Page 82)

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By
F. L. SINGLETON

Dry in Regular Pay, Willamar Well May Have New Sand

CORPUS CHRISTI, Tex., Feb. 3.—Testing of a second well in the newly opened Willamar field, Willacy County, and scheduled production tests on several important outpost wells in proven fields were the highlights of development in the Southwest Texas district the past week.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Lower Gulf Coast			
Oil wells: Fields	10	1,903	59,741
Dry holes: Fields	2	.....	8,435
Total	12	.....	68,176
Laredo District			
Oil wells: Fields	6	778	19,895
Gas wells: Fields	2	.....	5,546
Dry holes: Fields	3	.....	7,308
Wildcats	3	.....	6,707
Total	14	.....	39,456
San Antonio District			
Oil wells: Fields	3	1,074	9,165

Pan American Production Co. was preparing to test 1-B Community, located about 1,000 ft. southeast of the discovery well of the Willamar field, Willacy County. The hole is bottomed at 8,722 ft. and 5½-in. casing was cemented at 8,131 ft. The well failed to core the discovery pay at 7,620-78 ft. and the test is expected to be made at intervals from 7,840 to 7,900 ft., where a drill-stem test is reported to have recovered some oily mud and 75 lb. working pressure. About 1½ miles northwest of the discovery the company's 1 Kent is drilling in shale below 6,500 ft.

Boyle field.—A new producing area or an important extension to the Boyle field, Starr County, was in the making as Dean & Hendrickson were testing 1 M. M. Garcia, about 1 mile northwest of production. The hole is bottomed at 3,476 ft. and 5½-in. casing was cemented at 2,909 ft. At the close of the week the well was being swabbed after perforating casing at 2,850-55 ft. and was reported to be showing some oil. This is new sand for the field inasmuch as the discovery pay in the Pettus zone is found at 3,400-3,500 ft. This section is reported to have been logged as a gas sand in the present well. In the field proper this same sand was also being tested in Fidelity Oil & Gas 3-D E. B. Carruth. This well found the discovery pay dry at 3,445-65 ft., and the hole was plugged back and testing is through perforated casing at 2,888-94 ft.

Nichols field.—A third producer was being completed in the Nichols field, Hidalgo County, as Royal Oil & Gas Co. 2 Yturria recovered pipe-line oil on two drill-stem tests. A 10-minute test at 3,458-63 ft. recovered 720 ft. of oil and 135 lb. working pressure, while another test at 3,463-70 ft. recovered 1,680 ft. of oil. This field is located about 1 mile east of the Samfordyce field, and production is said to be separated by a faulted condition.

North Rincon Extension

An extension to the North Rincon field, Starr County, was assured as Sun 2 Coates, 1,320 ft. northeast of production, cored sand showing oil at 3,621-52 ft. and on a 15-minute drill-stem test at 3,628-39 ft. recovered 1,254 ft. of oil and 10 ft. of salt water. Working pressure built up to 232 lb. This is a new sand for the structure and the well is drilling ahead to the discovery pay at 4,381-84 ft. North of the field about 2 miles Transwestern 2 Cameron, Survey 137, is drilling below 5,000 ft., after making an electrical survey at 4,277 ft.

The Holben field, Jim Hogg County, was extended about 3,600 ft. north with the completion of M. L. Massingill 1 Marrs McLean which was completed on the pump for an initial production of 45 bbl. daily. The hole is bottomed at 2,811 ft. and production is from sand at 2,798-2,803 ft. Another extension was promised as the same operator's 2 Marrs McLean, ¼ mile farther north, recovered 70 ft. of drilling mud cut with oil on a 35-minute drill-stem test at 2,793-2,811 ft., the total depth, and 5½-in. casing was cemented on bottom.

Hebronville.—Two wildcat locations were announced for the county as Sun Oil Co. moved in material for 1 Ella McCampbell, several miles south of the town of Hebronville. This is a projected 5,300-ft. test. In the southern part of the county F. A. Gillespie & Sons staked location for a 3,000-ft. test located on the Sylvester Gutierrez lease in the S. P. Peebles Survey 582.

Duval County.—In Duval County, and located about 17 miles northwest of the town of Freer, Jack Giblin and Gus Tsesmelis have apparently opened a shallow field as 1 C. Holzapfel, M. Childer Survey 178, was being rigged up to pump, after the operators were unable to get the well to flow. Total depth of the hole is 1,203 ft. and the well is being tested through perforated casing at 1,089-1,100 ft. Oil is said to be standing about 200 ft. from the top of the hole.

Dimmit County Discovery

Producers Corp. 1 McKnight, the discovery well of the Carrizo field, Dimmit County, has been officially completed for an initial production of 76 bbl. of pipeline oil per day through a ¼-in. choke. Production is from the Navarro sand at 2,294-98 ft., the total depth. Approximately 100 bbl. of oil was sold during the week to the Phoenix Refining Co. of San Antonio at $1.10 per barrel, delivered.

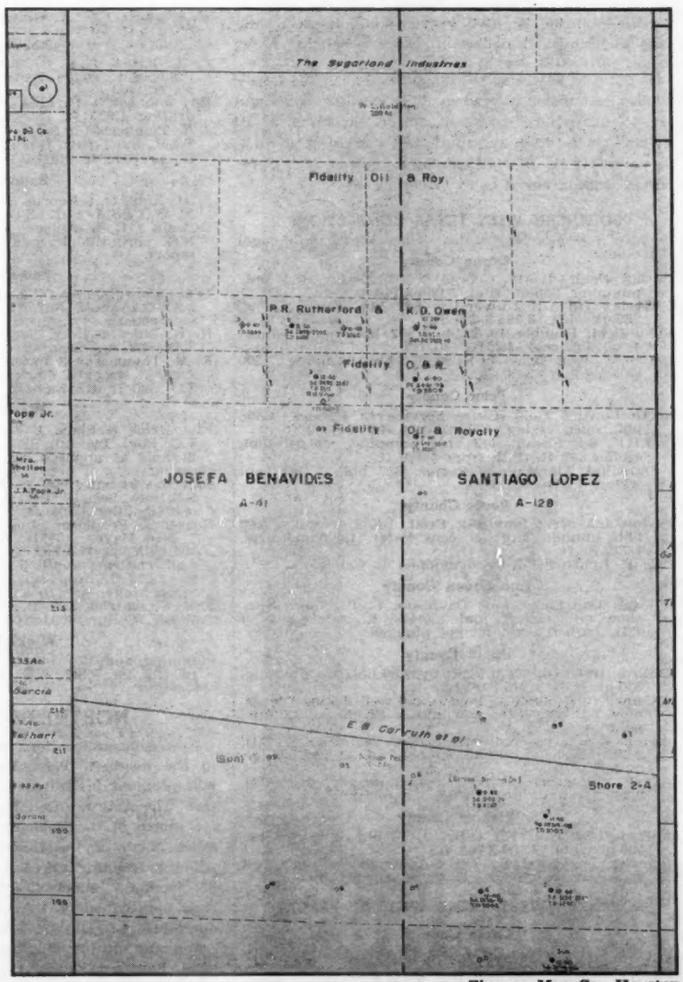
Atascosa County.—Henderson Coquat 1 Beshears, a Wilcox test, located in Atascosa County, is drilling in shale below 4,833 ft. An electrical survey showed sands with no showing of oil or gas at 2,855-77 ft., 4,029-45 ft., 4,084-4,115 ft., and 4,185-4,215 ft. The well is thought to be in the Wilcox but the top of the section was not available.

Medina County.—In Medina County Lewis Production Co. 1 McKnight, an Edwards lime test, was abandoned at a total depth of 3,233 ft. The Georgetown lime was topped at 3,180 ft. and the Edwards lime with a sulfur odor was topped at 3,227 ft.

Live Oak County.—In Live Oak County E. M. Jones 3-B George West is drilling in shale below 6,700 ft. and a protection string of 9⅝-in. casing will be cemented at 6,800 ft., preparatory to drilling to the Wilcox which is expected to be encountered below 8,000 ft.

Riverside.—In Nueces County, and located in the Riverside field, Stanolind 2 J. A. Thompson is flowing at the rate of 2.75 bbl. of distillate per hour through a 12/64-in. choke from perforated casing at 6,927-30 ft., and 6,941-44 ft. Tubing pressure was 2,525 lb. and casing pressure 2,650 lb. Southeast of the town of Robstown Sun Oil Co. is moving in material for a 7,000-ft. wildcat located on the B. L. Klosterman lease, in Section 145, Branniger Brothers subdivision of the Clarkson ranch.

Jim Wells County.—Location for a Frio-Vicksburg wildcat test was announced for Jim Wells County by Gulf Lakes Oil Co. et al. The well is 1-A Laughlin, located northeast of the Premont field in the center of combined Lots 9, 10, 23, and 24, in Section 76.



Zingery Map Co., Houston

Plat of the Boyle field, Starr County, showing location of Dean & Hendrickson 1 Garcia which is showing promise of opening an important extension

SOUTHWEST TEXAS COMPLETIONS

LOWER GULF COAST DISTRICT

Aransas County

McCampbell field: F. A. Gillespie 1 McCampbell, 81 bbl., ½-in. choke, perf. casing 6,822-26 ft., T.D. 7,254 ft.

Goliad County

Weser field: W. R. Davis 1 Ollie Webb, dry, T.D. 5,696 ft.

(Continued on Page 84)

By
R. MARNE SANFORD

Northern Pecos County May Have Third Ordovician Field

MIDLAND, Tex., Feb. 3.—New locations in the West Texas district totaled 77 during the past week which is about a 25 increase over the normal for 7 day periods. Ector County received 15, Yoakum 17, Cochran County 9, Gaines County 10, and the remainder were distributed among almost all counties in the district.

Ordovician test.—In Pecos County, the first deep discovery was the Apco field in 1939 and the second was the Abell field late in 1940. Northern Pecos County is now in line for its third deep field from the Ordovician levels. With Apco producing from the Ellenburger lime and Abell from the Simpson lime, the county's new testing discovery would, should commercial production result, give the county two lower Ordovician fields and one upper or Simpson lime Ordovician field.

The possible strike is Culbertson & Irwin, Inc., 1 Mary Heiner, Section 589, G.C.&S.F. Survey, 9 miles west and slightly south of the Apco field. On a 12-hour bailing test from 4,665 to 5,582 ft. the well showed 77 gal. of oil prior to acidizing. Hole was plugged back to 5,582 ft. from a total depth of 5,663 ft. and saturation from 5,382-90 ft. and 5,500-10 ft. was treated with 1,500 gal. of acid. It swabbed 13 bbl. of oil in 6 hours with some water. The hole was then again plugged back to 5,541 ft. and acidized a second time with 8,000 gal. after which it responded with several heads of oil. It is believed that agitation will develop a consistent flow, therefore testing will continue for several days. The Ordovician section had been topped at 5,188 ft.

Waddell extension.—Crane County's northeast Waddell extension area about 3½ miles northeast of the Tubb Permian field in the central part of the county has been given both extension producers and extension locations. About ½ mile south and east of the main body of the northeast extension area Gulf 18 Tubb, Section 29, Block 26-B, P.S.L. Survey, established a daily potential of 5,523 bbl. after 5,000 gal. of acid to rate as one of the largest wells in the entire field. Saturation was drilled to a total depth of 4,495 ft. A possible producer is in sight for the south end of the area as Gulf 16 Waddell, Section 28, Block 26-B, P.S.L. Survey, is bottomed at 4,533 ft. and preparing to test shows from 4,513-33 ft., considerably lower than other wells in the area.

Another ½ mile east extension location has been staked by Gulf as 19 Waddell, SW¼ Section 28, Block 26-B, P.S.L. Survey. A vast and indefinite oil reserve for West Texas is under the large Waddell ranch in Crane County, however, with Gulf Oil Corp. being almost the sole lease holder, slow but orderly development has featured the area during the past year. At the present time, assuming the Tubb Permian field to be linked with the northeast Waddell extension area, there exists approximately 17 sq. miles of oil field on the Tubb and Waddell ranches in the county.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Southern West Texas			
Oil wells: Jordan field	2	1,006	6,785
North Cowden field	3	2,585	13,114
Other fields	5	2,901	14,226
Dry holes: Fields	1	.....	100
Wildcat	1	.....	3,620
Total	12	.....	37,845
Old wells drilled deeper: Oil	3	624	.....
Dry	1	.....	.....
Northern West Texas			
Oil wells: Slaughter-Duggan field	4	2,900	20,113
Seminole field	2	1,053	10,584
Wasson field	13	11,075	67,760
Total	19	.....	98,457
Panhandle			
Oil wells: Stinnett field	3	318	9,115
Borger field	3	730	8,849
Other fields	4	265	11,983
Dry holes: Fields	2	.....	5,710
Total	12	.....	35,657
Southeast New Mexico			
Oil wells: Eddy County	3	466	6,437
Lea County	3	354	10,880
Gas wells: Lea County	1	*20	3,623
Dry holes: Eddy County	2	.....	3,965
Total	9	.....	24,905

*Million cu. ft.

Hayes Gas Field

Ward County's Hayes gas field, discovered early in 1940, has a north outpost test preparing to attempt completion from the Delaware sand. The test is Roeser & Pendleton and Merry Bros. & Perini 1 Bird S. Hayes, extreme south corner of Section 164, Block 34, H.&T.C. Survey, a northeast offset to the Slack-Fitzpatrick et al 1 Hayes, discovery gas well for the field. The outpost test is bottomed at 5,169 ft. with saturation reported drilled consistently from 5,089 to 5,149 ft. Some oil has been recovered from the hole, it reportedly being of high gravity and almost in the distillate range. A drill-stem test is scheduled to be made early this week.

McCulloch wildcat.—McCulloch County had a new wildcat test under way when R. E. Clark spudded and set 8¼-in. surface casing at 232 ft. in his 1 J. B. Lively, 150 ft. from the south and east lines of SE¼ Section 931, H. F. Hatfield Survey. It was last reported drilling ahead below 510 ft.

SOUTHERN WEST TEXAS COMPLETIONS

(24-hour ratings based on last 3 hours of 6-hour gage)

Crane County

Jordan field: R. B. George 3 University, 184 bbl., pumping, 350-qt. shot, 3,056-3,146 ft.
Westex Oil 1-B University, 822 bbl., open tubing, 350-qt. shot, 3,385-3,639 ft.
Tubb field: Humble 49 Tubb, 1,892 bbl., open tubing, 4,000 gal. acid, 4,251-4,410 ft.
McCamey field: Texas 48 King, 215 bbl., pumping, 5,500 gal. acid, 2,308-90 ft.

Ector County

North Cowden field: Cities Service 12 Rhodes, 1,806 bbl., open casing, 330-qt. shot, 4,075-4,190 ft.
M.B.K. 5-C Foster, 442 bbl., pumping, 690-qt. shot, 4,175-4,343 ft., P.B. from 4,349 ft.
Stanolind 7-B Midland Farms, 337 bbl., 1 per cent water, 4,395-4,581 ft.

Pecos County

Taylor-Link area: Landreth Prod. 1-K University, 269 bbl., pumping, 10 per cent water, 1,500 gal. acid, 1,739-70 ft.
A. E. Lynch 2 Cordz, abandoned at 100 ft.

Tom Green County

Wildcat: Dan Short 1 G. Davidson, L. P. Moore Sur., show oil 2,600 ft. and 2,894-95 ft., salt water at T.D. 3,620 ft., dry but not plugged.

Upton County

McElroy field: Gulf 236 McElroy, 486 bbl., open casing, 530-qt. shot, 2,745-2,888 ft.
McCamey field: Shell 32 Bowen, old well drilled deeper, new T.D. 2,204 ft., new initial 42 bbl. in 12 hrs., pumping.
Shell 42 Bowen, old well drilled deeper, new T.D. 2,203 ft., new initial 180 bbl. oil 30 bbl. water, pumping.
Shell 2 Rogers, old well drilled deeper, new T.D. 2,439 ft., new initial 360 bbl., pumping.

Winkler County

O'Brien field: Gulf 151 O'Brien, 39 bbl. open tubing, 500-qt. shot, 2,569-2,768 ft.
Hendricks field: Skelly Oil 5-A Hendricks, old well drilled deeper, new T.D. 2,918 ft., dry.

SOUTHERN WEST TEXAS WILDCAT REPORT

Crane County

Gulf 1-F University, SE SE Sec. 22, Blk. 31, University Sur., drilling 9,160 ft.
Gulf 17 Waddell, Sec. 13, Blk. 3, H.&T.C. Sur., 4 mi. S of Sand Hills field, drilling 2,579 ft.

Crockett County

Moore & Olson 2 Noelke, 495 ft. from N and 2,548 ft. from W lines, Sec. 77, Blk. GG, T.W. Carter Sur., T.D. 1,217 ft., flowed 25 bbl. per hr., S.I.
I. T. I. O. Roy Henderson, NW SE Sec. 33, Blk. ST, 2,000 ft., drilling 240 ft.
Geo. T. Morris 1 Brock Hoover, SW SE Sec. 99, Blk. 1, I.&G.N. Sur., 2,000-ft. test, drilling 417 ft.

Culberson County

Cecil Cothrun 1 Casey-Rounsoville, Sec. 7, Blk. 104, P.S.L. Sur., S.D. 1,271 ft., bailed some free oil.

Ector County

Stanolind 1-B W. F. Cowden, SE W¼ Sec. 12, Blk. 44, Twp. 1n, T.&P. Sur., deep Holt lime test, drilling 5,502 ft.
Cities Service 1 F. V. Addis, SW SE Sec. 34, Blk. 43, Twp. 2s, T.&P. Sur., drilling 3,800 ft.
Phillips 1-22 Embar, Sec. 6, Blk 44, Twp. 2n, T.&P. Sur., T.D. 4,312 ft., 1,000 gal. acid flowing by heads, preparing to re-treat.

Loving County

H. C. McAuley 1 E. Hall, SE Sec. 60, Blk. 7, W.&N.W. Sur., 8¼-in. 1,712 ft., drilling 2,895 ft.
Sloan & Zook 1 T.&P. Trust, SW SE Sec. 37, Blk. 36, Twp. 1s, T.&P. Sur., 3¾ mi. NE of Tunstill gas well, drilling 2,751 f.t
Pinal Dome Oil 1 Michigan Oil fee, NW SW Sec. 15, Blk. 26-C, P.S.L. Sur., 5,300-ft. test, first report.

Pecos County

Culbertson & Irwin 1 R. G. Heiner, NE NE Sec. 589, G.C.&S.F. Sur., Ordovician wildcat, show oil in upper Ellenburger lime, show oil 5,382-90 ft. and 5,500-10 ft., treated 1,500 gal. and 8,000 gal. acid, flowing by heads while testing.

Schleicher County

Harold B. Opp 1 Jackson, Sec. 41, Blk. LL, T.C. Sur., drilling 6,018 ft.

Reagan County

H. Schooler 1 R. A. Wolters, NE NE Sec. 51, G.C.&S.F. Sur., S.D. 20 ft.

Reeves County

C. A. Kitsos 1 A. B. Burchard, SW Sec. 7, Blk. 58, P.S.L. Sur., Delaware test, spudded and S.D., drilling water well.
Roy Johnson 1 Perkins, Sec. 18, Blk. 7-C, P.S.L. Sur., drilling 1,925 ft.
J. T. Pemberton 1 fee, NE NE Sec. 2, Blk. 55, Twp. 7, T.&P. Sur., first report, Delaware lime test, 7,500-ft., prepare to start.

Sutton County

S. B. Roberts 1 George Allison, NW NE Sec. 44, Blk. K, G.H.&S.A. Sur., S.D., casing 740 ft.
Domain 1 G. S. Allison, SW NE Sec. 91, Blk. 9, T.W. N.G. Sur., Ellenburger lime test, S.D. 1,098 ft., last report.

Terrell County

Texas Consolidated Oil 1 Holmes, NE NE Sec. 14, Blk. 2-A, G.H.&S.A. Sur., 3,600-ft. test, 10-in. 1,100 ft. (corrected).
H. H. Sides 1 Rose, Sec. 15, Blk. 148, T.&St.L. Sur., T.D. 602 ft., cleaning out.
E. M. Thomasson 3 Bates-Graham, 600 ft. from N and 2,490 ft. from W lines, Sec. 30, Blk. 1, I.&G.N. Sur., S.D. 360 ft. (corrected).

Ward County

Fitzpatrick & Slack 1 Wilson, Sec. 145, Blk. 34, H.& T.C. Sur., 1½ mi. SE of discovery well, tools lost in hole at about 4,700 ft., T.D. 4,925 ft., S.D. for casing.
Gulf 6 Wristen 1,997 ft. from SE and 1,989 ft. from NE lines, Sec. 18, Blk. 5, H.&T.C. Sur., deep Silurian test, drilling 1,295 ft.
Roeser & Pendleton, Inc., and Merry Bros. & Perini 1 Bird Hayes, 467 ft. from SE and SW lines, Sec. 164, Blk. 34, H.&T.C. Sur., ¼ mi. N of discovery gas well, contract depth 5,200 ft., to Delaware sand. 10-in. 1,072 ft., top sat. in Delaware sand 5,089 ft., cored broken sat. to 5,169 ft., prepare to test.
J. E. Fitzpatrick 1 T. B. Pruit, SW SW Sec. 23, Blk. 1, W.&N.W. Sur., T.D. 105 ft., R.U.R.

Winkler County

Stanolind and Westbrook 1 Maracaibo, NW NW Sec. 19, Blk. 26, P.S.L. Sur., 2½ mi. NW Hendricks field, location.

NORTHERN WEST TEXAS

New wildcat locations featured the week's activity in the northern West Texas area with exploratory holes located in Andrews, Mitchell and Martin counties. The Andrews County test is only a few hundred feet north of the Ector County line and is about 1¼ miles north of the North Cowden field. Staked as Atlantic Refining Co. and Sun Oil Co. 2-B Holt, SE SE Section 7, Block 43, Township 1n, T.&P. Survey, it is approximately 1⅛ miles due east of the same operators' 1-B Holt, a small 53-bbl. well drilled several years ago. It will test the regular North Cowden level, however, should this fail, it would be considered for deepening to the Holt lime level at 5,200 ft.

Martin County.—In Martin County Magnolia Petroleum Co. has announced its first location for a large

10,000-acre block in the northwestern part of the county. The company has some 50,000 acres under lease in northwestern Martin County and north into Dawson County and south into Midland County. The new operation will be 1 Teague, 467 ft. from the north and west lines of Labor 10, League 260, Borden County School Lands Survey. It was announced only as a Permian lime test. The site is about 28 miles southeast of the Cedar Lake field of northeastern Gaines County.

Mitchell County.—Mitchell County was given a new wildcat when C. E. Casebolt staked his 1 J. E. Franklin, 330 ft. from the NE cor. NW¼ Section 50, Block 27, T.&P. Survey. It is about 3 miles southwest of Colorado and will produce from the San Angelo lime of Permian.

NORTHERN WEST TEXAS COMPLETIONS

(24-hour ratings based on last 3 hours of 6-hour gage)

Cochran County

Duggan field: Osage Drilling Co. 2-D Moore, 686 bbl., open tubing, 9,000 gal. acid, 5,010-40 ft.
Osage Drilling Co. 1 Smith, 394 bbl., open tubing, 8,000 gal. acid, 5,025-69 ft.

Gaines County

Seminole field: Amerada Pet. 8-A Riley, 718 bbl., ½-in. choke, 3,000 gal. acid, 5,106-5,320 ft.
Magnolia and Atlantic 10-251 H.&J., 335 bbl., ½-in. choke, natural, 5,208-64 ft.
Wasson field: Carter and Continental 6-44 Moore & Langdon, 861 bbl., 48/64-in. choke, 12,000 gal. acid, 4,905-5,050 ft.

Hockley County

Slaughter field: Magnolia 3-F Mallett, 962 bbl., open casing, 10,500 gal. acid, 4,929-99 ft.
Tide Water 1 Z. O. Lincoln, 858 bbl., open casing, 8,000 gal. acid, 4,918-5,005 ft.

Mitchell County

Dockery & Robbins field: H. H. Simons 1 Ed Strain, abandoned location.

Scurry County

Sharon field: Western & Southern Oil 3 Sorrels, abandoned location.

Yoakum County

Wasson field: Aloco Oil 11 Keller, 496 bbl., 18 per cent water, 10,000 gal. acid, 4,920-5,197 ft.
Aloco Oil 12-B Willard, 756 bbl., open tubing, 10,000 gal. acid, 5,025-5,218 ft.
Basin States Oil 3 Law & Fisher, 933 bbl., open tubing, 10,000 gal. acid, 4,935-5,216 ft.
Denver Prod. & Ref. 23 Whittenburg, 1,660 bbl., 10,000 gal. acid, open tubing, 4,830-5,118 ft.
Humble 14 Bennett, 841 bbl., ⅞-in. choke, 10,000 gal. acid, 5,120-5,284 ft., P.B. from 5,300 ft.
Magnolia 24 Mahoney, 1,050 bbl., 53/64-in. choke, 6,000 gal. acid, 5,005-5,175 ft.
Oil Development 7-763 fee, 309 bbl., ⅝-in. choke, 14,500 gal. acid, 5,060-5,255 ft.
Oil Development 10-763 fee, 692 bbl., ⅞-in. choke, 10,000 gal. acid, 5,025-5,270 ft.
Oil Development 11-763 fee, 1,335 bbl., 1⅛-in. choke, 10,000 gal. acid, 5,130-5,270 ft.
Sinclair Prairie 2 Willard, 881 bbl., open tubing, 7,500 gal. acid, 5,011-5,293 ft.
T. & P. Coal & Oil 30 Bennett, 155 bbl., 30/64-in. choke, 10,000 gal. 5,160-5,238 ft.
T. & P. Coal & Oil 4 Hall, 1,106 bbl., open tubing, 10,000 gal. acid, 4,930-5,160 ft.

NORTHERN WEST TEXAS WILDCAT REPORT

Andrews County

Phillips 1 University-Drews, NW NE Sec. 32, Blk. 10, University Lands Sur., drilling 5,482 ft.
Phillips 2 Embar, NE SE Sec. 5, Blk. 44, Twp. 2n, T.&P. Sur., ¾ mi. N of Embar, S.D.O. 5,477 ft.
Furham Pet. 1 Lockhart-Brown, Sec. 24, Blk. 42-A, P.S.L. Sur., top solid lime 4,155 ft., T.D. 4,700 ft., P.B. 4,558 ft. to test.

Cochran County

Rhodes and Atlantic 1 Dean, C NE Tract 4, Lge. 89, Lipscomb County School Lands, T.D. 5,150 ft., P.B. 5,112 ft., treated with 1,000 gal. acid, shot 210-qt. P.B. to 5,099 ft., water not shut off, still testing.

Gaines County

Amon G. Carter 4-D Wasson, NW SE Sec. 50, Blk. AX, P.S.L. Sur., logged new pay about 6,610 ft., tight well, application filed to drill to 11,000 ft., drilling 10,200 ft.
W. E. Smith 1 fee, in Lots 11 and 12, Blk. 38, in Seminole townsite, 1¼ mi. E of Seminole field, building derrick.

King County

J. B. Cunningham 1 F. W. Thormann, NE NE W. C. Browder Sur., drilling 1,680 ft., 3,000-ft. test, last report.

Martin County

Magnolia 1 N. D. Teague, NW NW Lab. 10, Lge. 260, Borden C.S.L. Sur., 5,500-ft. test, drilling water well.

Mitchell County

Peck & Croft 1 Jack Smith, 2,173 ft. from N and W lines, Sec. 19, Blk. 26, T.&P. Sur., drilling 1,462 ft.
C. E. Casebolt 1 J. E. Franklin, NE NE NW Sec. 50, Blk. 27, T.&.P Sur., first report.

Yoakum County

George Livermore 1 Ownby, NE NE NE Sec. 502, Blk. D. Gibson Sur., drilling 5,137 ft.

TEXAS PANHANDLE

AMARILLO, Tex., Feb. 3.—Completions in the Texas Panhandle fields showed a substantial increase over the past 7-day period with a total of 12 finals recorded, only two of them being dry and the remainder oil wells.

Possibly indicating a townsite drilling program for the city of Pampa, a test just southwest of that town showed 1,000 ft. of oil in the hole at the close of the week. It had been previously indicated that if commercial production resulted several townsite tests would be started. The well is Rock Oil 1 Vicars estate, Section 114, Block 3, I.&G.N. Survey. Lime pay was topped at 3,304 ft. Testing will be started this week. An offset well on one side would place it within the limits of the city of Pampa.

TEXAS PANHANDLE COMPLETIONS

(24-hour pumping gages)

Carson County

Skellytown field: Magnolia 96 fee 244, 119 bbl., 3,000-98 ft.
Shell 1 Percival, dry at 3,280 ft.

Gray County

Pampa field: Stanolind 8 Cobb "A," 55 bbl., 3,310-46 ft.
Cities Service 8 Waiberg, 71 bbl., 3,020-75 ft.

Hutchinson County

Stinnett field: Harry Steckoll 1 Christian, 47 bbl., 2,930-55 ft.
A. C. Oates 5 Starnes, 80 bbl., 3,046-3,100 ft.
Gulf 101 Dial, 191 bbl., 3,020-60 ft.
Borger field: J. E. Crosbie, Inc. 38 Pitts, 421 bbl., 2,743-2,850 ft.
Phillips 48 Cockrell, 263 bbl., 2,915-3,019 ft.
Phillips 11 Jordan, 46 bbl., 2,920-80 ft.

Wheeler County

Kellerville field: El Bar Oil Corp. 1 Parrott, dry at 2,430 ft.
Magic City field: Cubb Oil 2-A Major, 20 bbl., 2,451-64 ft.

SOUTHEAST NEW MEXICO

HOBBS, N. M., Feb. 3.—Activity in Southeast New Mexico, which has been in a slump for several weeks, showed an increase over the past 7-day period, with nine completions registered for the district. Of these, three oil wells and two failures were in Eddy County and three oil wells and one gasser were in Lea County.

The shallow Red Lakes field west of the Artesia area in Eddy County had its largest producer when Ployhar 1 Spurck-State, NW NW SE 24-17-27, was gaged at 300 bbl. daily, flowing natural from pay drilled from 465-90 ft.

(Continued on Page 81)

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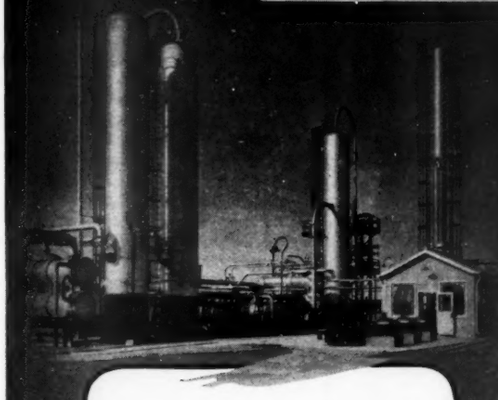
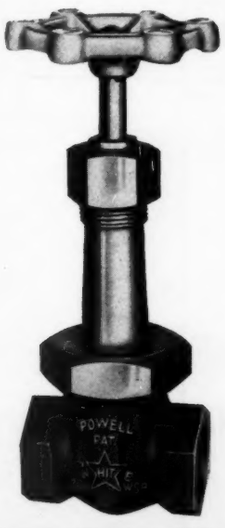


Natural Gasoline Manufacturing

HERE'S A POWELL VALVE THAT HAS PROVED ITS DEPENDABILITY OVER YEARS OF FAULTLESS SERVICE



BRONZE "WHITE STAR" GATE VALVE (Fig. 375)

Ground joint union connection between body neck and bonnet base, held fast by a deep threaded hexagonal ring nut. Machined face on under side of bonnet engages cut-off collar machined on stem to permit repacking under pressure with valve wide open. Wide and deep stuffing box for ample packing. Protruding packing gland, held rigidly by extra heavy nut, affords an additional guide for stem. These and other Powell features ably equip it for many production services.

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POWELL VALVES

THE WM. POWELL CO. • CINCINNATI, OHIO

St. Gabriel Wildcat Showing As Probable Pool Opener

By F. L. SINGLETON

NEW ORLEANS, La., Feb. 3.—With the Westwego prospect, about 12 miles west of New Orleans, Jefferson Parish, definitely established as Louisiana Gulf Coast district's first oil field of the year, interest in this area is now centered on the St. Gabriel prospect, Iberville Parish, where favorable showings logged in a wildcat point to another new discovery.

The probable pool opener is Titanic 1 Natalbany Lumber Co., northeastern Iberville Parish, which is drilling below 8,250 ft., following an electrical survey at 7,958 ft. The survey showed the following results: 7,766-94 ft., 127 mv. porosity and 94 ohms resistivity; 6,680-92 ft., 120 mv. porosity and 18 ohms resistivity; 6,901-06 ft., 110 mv. porosity and 15½ ohms resistivity. Approximately 12 side-wall cores at intervals from 6,880-7,794 ft., showed sand with a good oil odor. Location is in 7-9s-12e, on a farmout lease from Shell Oil Co., Inc., which drilled a deep test on the prospect last year. This well, 1 Natalbany, located about ½ mile south of the present well, was drilled below 10,000 ft., and several interesting sand sections were logged, but drill-stem testing was unsatisfactory. Correlated with the abandoned hole, the Titanic well is 196 ft. structurally higher. Seven-inch casing is being moved to the location, and will probably be cemented as protection, as the hole is expected to be drilled much deeper before a production test is made.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	11	1,910	68,611
Dry holes: Fields	4	.....	13,110
Wildcat	1	.....	4,203
Total	16	.....	85,924

Westwego.—The above well is the company's second strike within the past 2 weeks, the other discovery being made at the Westwego area, Jefferson Parish, where 1 Marrero Land Co. is still flowing into the pits through a 7/64-in. choke at the approximate rate of 200 bbl. of fluid per day of which 120 bbl. is 29.2-gravity oil, 30 bbl. salt water and the balance wash water and mud. Tubing pressure was 2,250 lb., and casing pressure 2,200 lb. The well flows clean oil at intervals and then flows mud and water with a trace of oil. At the time of completion it was making about 100 bbl. of salt water. Total depth of the hole is 10,004 ft., and production is from the Miocene sand through perforated liner at 9,830-42 ft. Unless the flow becomes free of salt water, the well is expected to be killed and retested.

Schooner Bayou.—A new sand discovery in the Schooner Bayou field, Vermilion Parish, has apparently marked up a 1½-mile northeast extension. Union Oil Co. of California 4 Louisiana Land & Fur Co. is reported to have flowed 295 bbl. of 34-gravity oil in 15 hours through a 5/32-in. choke before salt water broke in. The well has been killed and is being restored in the same sand section following a series of cement-squeeze jobs. The sand section at 7,324-58 ft. is approximately 3,000 ft. shallower than the company's discovery well, 1 Webster, completed in sand at 10,536-42 ft. East of the discovery well, the company's 1-B School Board is preparing to retest after showing for a gas well the previous week at 10,512-15 ft.

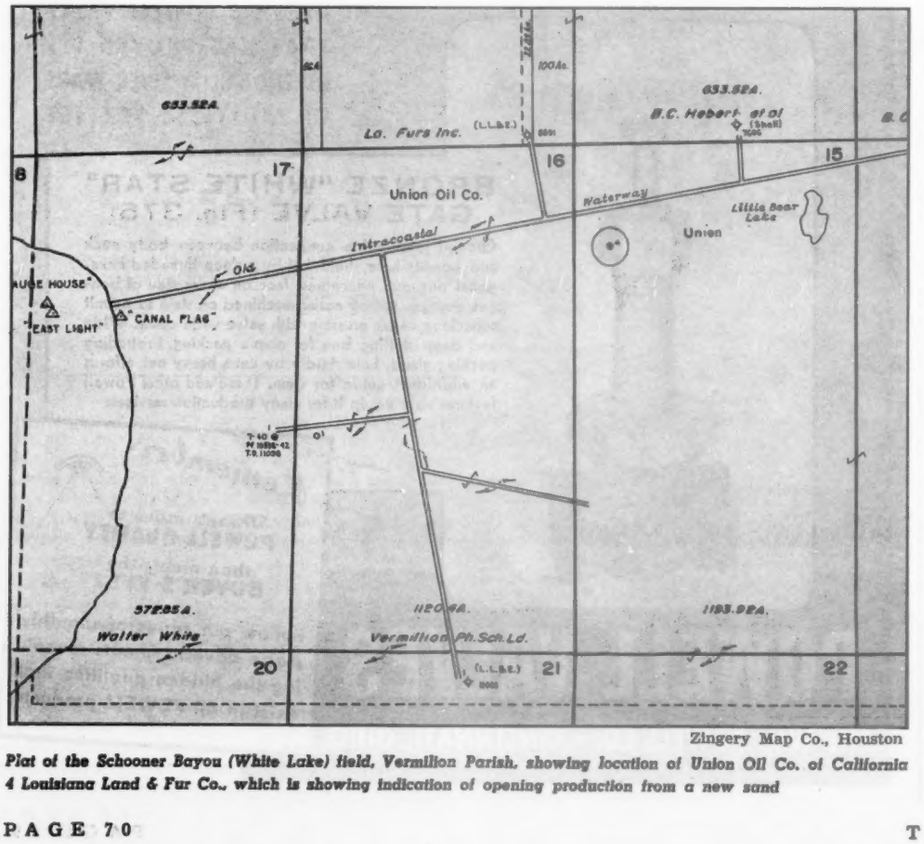
Iowa.—In the Iowa field, Calcasieu-Jefferson Davis parishes two wells were in the process of completion. Both are expected to extend the 8,200-ft. Frio sand. On the Jefferson Davis Parish side of the field and located north of production, Stanolind 1 Willett is being tested through perforated casing at 8,228-58 ft., while Shell 6 Fontenot on the extreme east side of the field is bottomed at 9,065 ft., and 5-in. liner is being set preparatory to testing sand at 8,822-42 ft. This is the second well to be drilled below the 8,200-ft. sand, and the 8,800-ft. horizon is logged as a gas-distillate sand.

Lowry.—On the Lowry prospect, Cameron Parish, Libson-Iberia Oil Co. 1 Calcasieu National Bank is drilling in sandy shale below 10,360 ft. after it attempted to blow out while drilling with 17-lb. mud at 10,340 ft. This well is assured to making a distillate producer as a previous test at 10,050-60 ft., showed favorable results. The well will be drilled to a depth of 10,600 ft., and unless a new sand section is encountered the hole will be plugged back and completed as a gas-distillate producer.

Gueydan.—Union Sulphur Co. entered into development on the south flank of the Gueydan field, Vermilion Parish, where prolific production from a new sand was recently opened. The well is 1 Baker, 300 ft. east of Fohs 2 Mulvey Irrigation Co. In the same area, Fohs Oil Co. is rigging up for 3 Mulvey Irrigation Co.

Bayou de Glaise.—On the north flank of the Bayou de Glaise dome, Iberville Parish, Humble 3-B Wilberts has been abandoned at 9,573 ft. Drill-stem testing through perforated casing in sand at 7,100 ft. showed oil, salt water and gas. This is the second deep test drilled on the structure, and additional development is expected to be started in view of the excellent showings encountered in both wells.

Bayou Blue.—On the southwest flank of the Bayou Blue dome, Iberville Parish, Superior Oil Co. of California 1 Grief Cooperage Co. is bottomed in a sidetracked hole at 9,700 ft., and 7-in. casing was cemented on bottom. This is the deepest test drilled, and the well is expected to test several showings logged below 5,000 ft.



Zingery Map Co., Houston

Plat of the Schooner Bayou (White Lake) field, Vermilion Parish, showing location of Union Oil Co. of California 4 Louisiana Land & Fur Co., which is showing indication of opening production from a new sand

LOUISIANA GULF COAST COMPLETIONS

Acadia Parish

Ritchie field: Vincent & Welch 1 Hayes, 69 bbl. fluid, ¼-in. choke, 50 per cent salt water, top sand 3,506 ft., T.D. 3,514 ft.
North Crowley field: Humble 5 Reiners, 192 bbl., 9/64-in. choke, perf. casing 8,620-27 ft., T.D. 8,760 ft.
South Crowley field: Humble 3 Leger, dry, T.D. 8,984 ft.
Wildcat: Bering Oil Co. et al 1 Sittig, dry, T.D. 4,203 ft.

Calcasieu Parish

Sulphur field: Union Sulphur 874 fee, 260 bbl., 24/64-in. choke, perf. casing 4,999-5,021 ft., T.D. 5,098 ft.

Evangeline Parish

Ville Platte field: Continental 2 J. E. Vidrene, 68 bbl., 7/64-in. choke, perf. casing 8,938-60 ft., T.D. 10,207 ft.

Iberia Parish

Fausse Point field: Sun 6 Planters Lumber Co., dry, T.D. 1,421 ft.

La Fourche Parish

Golden Meadow field: Brown & Wood 2 Cheramie, 217 bbl., 7/64-in. choke, perf. casing 5,148-60 ft., T.D. 5,205 ft.
Brown & Wood 6 State, 94 bbl., 9/64-in. choke, perf. casing 5,156-68 ft., T.D. 5,504 ft.

Plaquemines Parish

Venice field: Tide Water 9 Buras Levee District, 302 bbl., ⅛-in. choke, perf. casing 10,600-60 ft., T.D. 10,704 ft.

St. Landry Parish

Port Barre field: McDannald Oil Co. 3 Futral, 337 bbl., ⅛-in. choke, perf. casing 5,552-56 ft., 5,644-50 ft., T.D. 5,658 ft.

St. Martin Parish

Anse La Butte field: Iberia Oil Co. 2-A Martin, dry, T.D. 2,907 ft.
Stanolind 1-A Martin, 39 bbl., pumping, perf. casing 2,334-48 ft., T.D. 2,823 ft.
West Lake Verret field: Shell 7 Jeanerette, 266 bbl., 11/64-in. choke, perf. casing 8,798-8,808 ft., T.D. 8,825 ft.
Shell 1 Breaux-Nerman, 198 bbl. oil and 112 bbl. salt water, 11/64-in. choke, perf. casing 7,988-95 ft., T.D. 9,850 ft.

St. Mary Parish

Charenton field: Pan American 28 Veeder, 60 bbl. fluid, 50 per cent salt water, pumping, T.D. 1,139 ft.

Terrebonne Parish

Bay St. Elaine field: Jefferson Lake Sulphur Co. 7 Salt Dome Royalties, dry, T.D. 798 ft.

LOUISIANA GULF COAST DRILLING REPORT

Avoyelles Parish

C. C. Parks et al 1 G. W. Snowden, 22-3n-5e, deepening from 7,210 ft., cleaning out hole.

Calcasieu Parish

Gulf 1 Calcasieu National Bank, Hayes prospect, 18-11s-5w, drilling shale 6,897 ft.

Evangeline Parish

Bering Oil Co. 1 Fruge, 10-6s-2w, S.D. 1,530 ft.

Iberia Parish

Gulf 1 Petit Anse Co., Avery Island salt dome, 59-13s-6e, drilling shale 6,760 ft.

Jefferson Davis Parish

Continental 1 Jaenke, South Roanoke field, 24-10s-4w,
(Continued on Page 83)

By R. MARNE SANFORD

Successful Wildcats Cause Expansion of Play

WICHITA FALLS, Tex., Feb. 3.—The North Texas district continues to lead the state in field and wildcat activity from week to week, however, no major development occurred during the past 7-day period. Several of the recently discovered fields throughout the area were given outpost tests during the week and several wildcats were testing for new production.

Harrold.—In Wilbarger County's recently opened Harrold field, discovered by Big Six Oil 1-A Morris, the discovery firm has made locations for three offsets to the discovery well. They are on the J. H. Orr estate tract, Rose Lee Survey, each being 330 ft. from a corner of the tract. The discovery was completed from sand at 2,895-2,906 ft. for 100 bbl. daily. Nearest production is 5 miles southwest and in the Rock Crossing field.

Hults-Owen.—The Hults-Owens field in southwestern Montague County was given a new operation when Larry Hults and Tom B. Owens, field discoverers, staked 1 W. E. Summers, SW cor. Section 2821, T.E.&L. Survey, a north offset to the discovery well which was completed from the Bend lime from 6,010-50 ft. Meanwhile testing continued at the Marshall 1 Bullard, west offset to the discovery. Casing has been recemented for a third time in an attempt to shut off water encroachment.

Bonita.—A new ¼-mile northeast outpost to the Bonita field in Montague County has been staked by Hilgre & Fountain of Fort Worth. Test is to be 1 Orville A. Talley, on a 5-acre townsite tract in the northeastern part of the town of Bonita. Contract depth is 5,300 ft.

Jack County.—The indicated completion of a gas discovery in Jack County was seen at Rathke Oil 1 Moseley, J. Harrison Survey, which has been attempting commercial oil completion for several months. At last reports it had been shot with 70 qt. from 4,498 to 4,545 ft. in an attempt to increase the oil output. The shot failed to affect the oil but increased the gas volume from 3,500,000 cu. ft. daily to 4,000,000 cu. ft. It will be completed as a gas discovery at this depth.

Jack County was given a new wildcat test and a wildcat deepening operation during the week. Reed & Craft have staked location for 1 E. C. Richards, a 3,500-ft. test to be drilled 2,310 ft. from the north and 467 ft. from the west lines of the G. Gates Survey, Abstract 237, about 2 miles south and slightly west of Jacksboro.

The deepening operation is Wrightsman Oil 1 Yates & Brant, formerly the H. R. Smith 1 test. Location is 1,180 ft. from the south and east lines of the John Holderman Survey, Abstract 268. With a total depth of 2,560 ft., the new contract depth is set at 3,500 ft.

Archer County.—Just northwest of the old shallow Gose field in Archer County a deep Mississippian lime discovery is indicated. It is King Oil 1 Taylor, Section 13, A.T.N.C.L. Survey. Failing to show production in the Ordovician section at a total depth of 5,055 ft., it was plugged back to 4,963 ft. to test shows of oil in the Mississippian section from 4,921-63 ft. After perforating casing from 4,926-36 ft. the hole filled 200 ft. with oil in 1 hour. Testing was delayed at the close of the week due to rain, however, completion attempts will be resumed the first of the week.

Archer County received two new shallow wildcats, one contracted to 1,600 ft. and the other 1,400 ft. Jack Story, Jr., has staked 1 L. F. Wilson, 150 ft. from the NE cor. of Lot 4, Section 86, A.T.N.C.L. Survey. Home Oil Co. has staked 1 Spain, 1,250 ft. from the north and 1,100 ft. from the east lines of Section 8, Meade Pasture Subdivision 55. The latter is the 1,400-ft. test.

As a deep wildcat seeking to determine the Ordovician trend between the K.M.A. field in Wichita and southern Archer counties and the Griffin field in northwestern Archer County, Consolidated Oil has staked 1-A Leslie Humphrey, 467 ft. from the south and west lines of the E. Heath Survey, about 3 miles east of the Griffin field. Contract depth is set at 5,500 ft. The Ellenburger lime of Ordovician has yielded production at two points in the K.M.A. field, however, to date no Ordovician wells have produced in northwestern Archer County.

SUMMARY OF COMPLETIONS

North Texas

	No.	Bbl.	Footage
Oil wells: Hull-Silk field	6	2,618	21,343
Voth field	3	374	4,652
Bryson field	2	522	6,055
K.M.A. field	4	1,836	16,369
Wilbarger field	2	13	3,197
Olney field	3	47	2,419
Other fields	8	6,140	28,904
Dry holes: Archer field	3	.....	5,005
Other fields	4	.....	8,434
Wildcats	2	.....	2,613
Total	37	.....	98,991
Old wells drilled deeper	3	198	.....

West Central Texas

Oil wells: Fields	4	594	9,767
Wildcat	1	1,100	3,022
Gas wells: Salt Creek field	1	*4.83	2,409
Dry holes: Wildcats	6	.....	11,605
Fields	3	.....	1,923
Total	15	.....	28,726

*Million cu. ft.

NORTH TEXAS COMPLETIONS

Archer County

Hull-Silk field: R. G. Dutty 1 Carson B, top lime 4,063 ft., show oil 4,550-66 ft., 4,574-4,612 ft., dry at 4,829 ft.

Mrs. J. H. Massie 23 Nichols, 22 bbl. an hour, ¾-in. choke, natural, 3,892-97 ft.

Deep Oil Development and C. B. Christie 6 Finley, 10 bbl., pumping, natural, 940-45 ft.

Chapman & McFarlin 13 Wilson C, 76 bbl. in 3 hr., ¾-in. choke, natural, 4,322-70 ft.

Chapman & McFarlin 3 Wilson F, 42 bbl. in 3 hr., ¾-in. choke, 120-qt. shot, 4,356-77 ft.

Helmerich & Payne 1 Shepard, old well drilled deeper, 120 bbl. in 4 hr., ¾-in. choke, 100-qt. shot, 4,282-4,332 ft.

B. L. Ligon and Deep Oil Development 8 Wilson, 29 bbl. an hour, ¾-in. choke, after acid, 3,956-61 ft.

Chapman & McFarlin 5 Wilson F, 43 bbl. in 2½ hr., ½-in. choke, 3,762-93 ft.

K.M.A. field: Magnolia 4 Thom, 56 bbl. oil and 34 bbl. water, pumping, 30-qt. shot, and 3,000 gal. acid, Ellenburger lime 4,398-4,484 ft.

Coleman field: Shell 1 Coleman, 338 bbl., 3 hr., open tubing, 3,000 gal. acid, 4,979-5,030 ft.

Wildcat: Southern Pet. 1 Wilson A, 130 bbl., pumping, daily, 1,500 gal. acid 5,161-66 ft. and 5,200-15 ft., located Lot 4, Blk. 75, A.T.N.C.L. Sur.

Archer field: Shappell Oil 4-E Jackson, dry at 1,796 ft.

Shappell Oil 2 Gulf, dry at 1,809 ft.

Young, Woody and Grace & Wood 3 Robertson, dry at 1,400 ft.

Rathke Oil 6 Harmell, 7 bbl., pumping, 24 hr., 1,429-34 ft.

Baylor County

Wildcat: British American Oil 1 Mattie Taylor, 59 bbl. oil and 17 bbl. water in 6 hr., swabbing, 2,500 gal. acid, 2,445-2,550 ft., located Sec. 210, T.&N.O. Sur., Abst. 805.

Clay County

Wildcat: George G. Golden 1 First Texas Joint Stock Land Bank B, Sec. 9, Thornberry subd., dry at 1,360 ft.

Clay field: Republic Natl. Gas and Metzner & Burns 1 Thornberry, dry at 1,435 ft.

Antelope field: Shell 5 Coburn, 540 bbl. in 8 hr., open tubing, 3,210-24 ft.

Cooke County

Walnut Bend field: Magnolia 13 Ramsey, 127 bbl., pumping, 4,720-30 ft.

Voth field: Whitfield, Pearson & Grimes 2 Sicking, 26 bbl., pumping, 1,665-89 ft.

Whitfield, Pearson & Grimes 5 Sicking, 52 bbl. in 4 hr., 1,280-1,302 ft.

Whitfield, Pearson & Grimes 11 Both, 36 bbl., 1,650-61 ft.

Jack County

Bryson field: Panhandle Ref. 2 A. C. Derrick, 43 bbl. in 2 hr., flowing, 3,118-28 ft.

Panhandle Ref. 6 Smith, 6 bbl., pumping, 10-qt. shot, 2,918-27 ft.

Montague County

Benton & Holmes field: Phillips 2 Fields, abandoned location.

L. S. Flannery 3 First National Bank, abandoned location.

United Prod. and Continental 2 Rich, pumped 52 bbl., 500 gal. acid, 2,998-3,021 ft., P.B. from 3,520 ft.

Wichita County

Wildcat: Underwood Oil 1 Owens, Sec. 49, Specht & McCutchin subd., dry at 1,253 ft.

Wichita field: George Proctor 55 Foster & Allen, dry at 1,385 ft.

K.M.A. field: Grace & Murphree 3 Burnett, 42 bbl. in 2 hr., ¾-in. choke, 200-qt. shot, 4,108-32 ft.

Bass & Dillard 12 Kemp & Kempner, 26 bbl. an hour, open tubing, 210-qt. shot, 3,823-86 ft.

Shell 18 Griffin, 163 bbl. in 6 hr., 50-qt. shot, 3,840-67 ft.

Wilbarger County

Fargo field: Amerada 1 Leudke, 158 bbl. in 3 hr., ½-in. choke, natural, 3,208-50 ft.

Wilbarger field: Pois & Schulz 5 Fleniken, 3 bbl. oil and 8 bbl. water, pumping, natural, 1,234-38 ft.

R. A. Laird and R. T. Lutz 2 Streit, 10 bbl., pumping, 20-qt. shot, 1,945-59 ft.

Young County

Olney field: E. S. Brashear 1 Rowton, dry at 785 ft.

Cato Brothers 3 Hamilton, 9 bbl., pumping, 867-84 ft.

B. T. Meyer 4 Prideaux, 8 bbl., pumping, 8-qt. shot, 560-68 ft.

Kimmell, Lee & Co. 2 Campbell B, 30 bbl., pumping, 953-67 ft.

Jeffery field: T. D. Humphries 5 Jeffery, old well deepened from 4,002-32 ft., flowed 30 bbl. in 24 hr., open tubing.

Strong field: A. T. Strong 1 Craig heirs, old well deepened from 4,243-4,440 ft., 16 bbl. in 8 hr., pumping, 10,000 gal. acid.

NORTH TEXAS WILDCAT REPORT

Archer County

W. B. Hamilton 22 Cartwright, 660 ft. from W and S lines, James Webb Sur., Abst. 664, T.D. 5,211 ft., P.B. 5,164 ft., 60-qt. shot 5,149-64 ft., swabbing est. 10 bbl. oil per day.

Walter Gant 1 Hunter, SE NW Sec. 7, Blk. 1, H.&T.C. Sur., top Ellenburger 5,370 ft., set 7-in. at 5,370 ft., top Caddo 5,133 ft., top Mississippian 5,315 ft., T.D. 5,391 ft., filled 30 ft. in 12 hr., prepare to treat.

Gibson & O'Donohoe 1 Jentsch, 330 ft. from N and E lines, H. Jentsch Sur., Abst. 995, T.D. 4,806 ft., perf. casing 4,171-90 ft., tested water, perf., drilling out cement.

Sam Kruger 1 Turbeville, 450 ft. from E and 389 ft. from S lines, NW Sec. 170, Robert Carson subd., 1,600-ft. test, S.D., repair 1,440 ft.

King Oil 1 Taylor, Lot 1, Sec. 13, A.T.N.C.L. Sur., show oil 4,995-5,020 ft., 5½-in. set 4,970 ft., top Mississippian 4,921 ft., top Ellenburger 4,963 ft., prepare to drill out, waiting on spudder.

H. F. Smiley 1 Larr, SW NW Sec. 136, H.S. of C.R. Sur., 1,400-ft. test, drilling 401 ft.

Adams Oil & Gas 1 Powell, SE Lot 14, Sec. 1, S.P.R.R. Sur., Abst. 406, 5,200-ft. test, 10-in. 142 ft., prepare to drill ahead.

Deep Oil and Christie 1 G. Moer, SW SW Sec. 21, Clark & Plumb subd., Blk. 3, 4,600-ft. test, 12½-in. 142 ft., prepare to drill ahead.

Shappell Oil 15 Lyles, NW NE Sec. 7, Hooper & Wade Sur., Abst. 234, 4,800-ft. test, spudding.

W. B. Hamilton 1 C. E. Graham C, SE part of Gibenrath Sur., Abst. 136, 2,000-ft. test, drilling 1,260 ft.

Jack Story, Jr., 1 L. F. Wilson, NE Lot 4, Sec. 86, A.T.N.C.L. Sur., 1,600-ft. test, first report.

Home Oil 1 Spain, NE Sec. 8, Meade Pasture subd. 55, 1,400-ft. test, first report.

British American Oil 1 Claude Owens, SE SE Sec. 102, T.&N.O. Sur., Abst. 1311, 2,600-ft. test, first report.

Baylor County

Hattie B. Madden 2 J. J. James, Sec. 150, T.&N.O. Sur., show oil 1,352-63 ft., lost drill pipe at 2,308 ft., S.D.

Rogers & Lanfair 1 Howe, J. Howe Sur., Abst. 572, show oil 1,445-52 ft., S.D. 3,115 ft., T.D., may drill deeper.

L. T. Burns 1 Burns, Sec. 73, T.&N.O. Sur., 4,500-ft. test, drilling 3,200 ft., tight well.

Clay County

Carlos Wagner 1 L. C. Thaxton, Sec. 2, T.&N.O. Sur., 6,500-ft. test, 10-in. 150 ft., drilling 1,552 ft.

Petroleum Producers 1 O. O. Ross, Sec. 8, J. Wyont Sur., Abst. 902, T.D. 5,584 ft., pumped 40 bbl. oil and 40 bbl. water in 24 hr. after 5,000 gal. acid, still testing.

Bridwell Oil 1 W. H. Myers, C. Thompson Sur., Abst. 444, 5,500-ft. test, moving in rig.

Akin, Dimock & Costley 1 Patrick, NE SE Sec. 82, 1,200-ft. test, location.

Gulf 1 C. W. Scaling, NW NW Sec. 31, T.&N.O. Sur., Abst. 685, 6,000-ft. test, derrick.

L. T. Burns 1 Southerland, NE cor. of W 100 acres of Sec. 63, J. H. Belcher Sur., 5,500-ft. test, S.D. 100 ft.

Denton County

Amon G. Carter 1 W. P. and A. P. Allen, S. Westbrook Sur., drilling 8,500 ft., 10,000 ft. contract depth.

Cooke County

R. B. Farris 1 Houston, 3,550 ft. from S and 3,600 ft.

from E lines of Charles DeMorse Sur., Abst. 332, 1,800-ft. test, first report.

Grayson County

Texas Co. 1 Hutchinson, Samuel Stewart Sur., S.D. 5,545 ft., tight well.

Hood County

W. G. Martin 1 W. G. Thorman, E cor. of 2,956-acre ranch, F. F. Anderson Sur., 5,000-ft. test, spudded and S.D.

Aztec Oil 1 Gallagher, SW SE Robert Alway Sur., 3,000-ft. test, fishing 2,000 ft.

Jack County

Continental 1 Robertson, M. J. Swan Sur., Abst. 1659, top Ordovician 5,380 ft., drilling 5,577 ft.

R. A. Conkling 1 M. Hoffle, A. James Sur., Abst. 319, 3 mi. S of Antelope, 3,500-ft. test. S.D. 3,128 ft.

Rathke Oil 1 Moseley, J. Harrison Sur., Abst. 259, 1,500 M.c.f. gas 4,645-50 ft., T.D. 5,347 ft., prepare to shoot section from 4,498 to 4,552 ft.

K. N. Davis 1 Jones, NW cor. E½ Sec. 2555, T.E.&L. Sur., 1 mi. SE Perrin, 2,500-ft. test, moving in rig.

Noah Davis 1 Rankin, E½ Sec. 2555, T.E.&L. Sur., moving in materials.

Three Bee Investment Co. 1 Armstrong, 700 ft. from S and 1,200 ft. from W lines, Sec. 2, W. P. Blake Sur., Abst. 1598, 3,300-ft. test, show oil 3,031-44 ft., show oil 3,167-77 ft., waiting on test.

Wrightsman Oil 1 Yates and Brant (old well drilling deeper), formerly H. R. Smith 1 Yates, John Holdeman Sur., Abst. 268, T.D. 2,566 ft., new contract depth 3,500 ft., prepare to start.

Harper-McClintock 1 Kinder, 1,400 ft. from E and 467 ft. from N lines, Sec. 2667, T.E.&L. Sur., 8¼-in. 1,125 ft., cleaning out 1,125 ft.

O. J. Perrin 1 Brumbelow, 1,045 ft. from S and 720 ft. from E lines, H. C. Ayers Sur., Abst. 4, S.D. 3,505 ft., after electrical survey.

Continental 1 Johnson, N part of D. D. Burton Sur., Abst. 1671, 5,500-ft. test, moving in rotary.

Parker County

Higginbotham 1 Gilbert, T.&P. Sur., Abst. 1958, T.D. 4,800 ft., fishing.

Montague County

Walter Gant 1 Will Laird, R. T. Millard Sur., Abst. 470, 7 mi. W of Sunset, T.D. 6,651 ft., P.B. to 6,596 ft., perf. casing 4,865-73 ft., best gage was 125 bbl., swabbing in 6 hr., after S.I. for 10 days, rotary moved off, S.D.

J. G. Hammond 1 Jester, 84-acre tract in E. Wingate Sur., Abst. 835, 2 mi. W Mallard, top Caddo lime 6,282 ft., S.D. 6,505 ft.

Sinclair Prairie 1 W. G. Hawkins, 631 ft. from N and 330 ft. from E lines of farm in Sec. 17, H.&T.C. Sur., 3 mi. SE of Ringgold, drilling 5,268 ft.

T. F. Hunter and Wilcox O. & G. 1 Barcus, NE Sec. 78, Kaufman C.S.L. Sur., Abst. 407, 3,600-ft. test, moving in material.

Tarrant County

Bruce Sullivan 1 W. C. Putnam, 200-acre tract in Milley Gilbert Sur., new contract depth 7,500 ft., drilling 6,600 ft.

Throckmorton County

Homer Moore and J. E. Dodson 1 J. O. Crump, Blk. 956, T.E.&L. Sur., location.

Humble 1 Allie McKnight, 1,100 ft. from N and 660 ft. from E lines, Sec. 2, D.L.&C. Sur., Abst. 1264, 5,000-ft. test, building derrick.

A. B. Bissey 1 W. L. May, NW SW Sec. 916, T.E.&L. Sur., Abst. 322, 610-ft. test, location.

Humble 1 Durham, NW NW Sec. 1627, T.E.&L. Sur., top Ellenburger 5,005 ft., lost drill pipe at 5,196 ft. in old hole, set whipstock 3,355 ft., drilling in new hole at 4,085 ft.

Wichita County

Big Six Oil 1 Edmonson, 150 ft. from N and W lines, Sec. 13, Red River Lands subd., drilling 1,722 ft.

Fred Browning 1 W. L. Warren, 996 ft. from N and 330 ft. from W lines, Sec. 32, W.V.F.L. Sur., cleaning out with spudder, 4,001 ft., T.D.

Golding & Cochran 1 D. R. Preston B, 2,970 ft. from N and 990 ft. from W lines, Sec. 26, Blk. 7, H.&T.C. Sur., T.D. 4,083 ft., P.B. 3,950 ft., 1,400 ft. oil in hole, waiting on test.

King Oil 1 Ancell, 330 ft. from N and E lines of C. L. Gibbs Sur., Abst. 390, 4,000-ft. test, show oil 3,600-03 ft., 6⅝-in. 3,000 ft., show oil 3,609-84 ft., 250 ft. oil in hole, prepare to test, T.D. 3,684 ft.

R. D. Doran 1 Ancell, SE Sec. 36, Blk. 5, H.&T.C. Sur., 4,000-ft. test, 7-in. 4,020 ft., show oil 4,034-49 ft., S.D. orders, tested no oil.

Underwood 1 E. D. Owen, SW SW Sec. 49, Specht & McCutchin subd., 1,250-ft. test, location.

Wilbarger County

W. H. Gant 1 Mock, Sec. 23, Blk. 11, H.&T.C. Sur., 6,000-ft. test, S.D. 440 ft., waiting on rotary.

Big Six Oil 1 Morris, Sec. 3, Blk. 14, H.&T.C. Sur., show oil 2,895-2,907 ft., 7-in. 2,895 ft., T.D. 2,905 ft., testing est. 60 bbl. oil per day, S.I., waiting on test.

Ray Brothers 1 Henry Streit, 72-acre tract in S. N. Gosnel Sur., Abst. 1231, 7-in. 1,913 ft., drilling 1,917 ft.

W. B. Omohundro 1 W. T. Waggoner, 1,100 ft. from E and 150 ft. from S lines of Sec. 49, Blk. 4, H.&T.C. Sur., 6⅝-in. 1,229 ft., show oil 1,229-47 ft., tested oil and water, prepare to P.B. to test, S.D.

Wise County

Cranfill & Rogers 1 McKay, Sec. 8, Falls C.S.L. Sur., T.D. 7,154 ft., prepare to test show oil 6,940-80 ft., top Ordovician 6,865 ft., top Ellenburger lime 7,005 ft., cemented 1,151 ft. of 4½-in. liner.

Manahan Oil 1 E. R. Collier, J. M. Wade Sur., Abst. 868, contract depth 7,500 ft. prepare to drill ahead below 6,047 ft., repairing rig.

Young County

E. Lennington 1 Perry, 165 ft. N of C of river and 46 ft. from W line of 126-acre A. W. Perry farm in Oliver T. Brown Sur., Abst. 25, S.D. 165 ft.

Ben H. Rankin 1 Mary Logan, SW part Blk. 2, J. W. Doty Sur., 8 mi. NE Graham, 2 mi. W Nelson field, show oil and gas 4,057-60 ft., drilling 4,110 ft.

B. C. Gilmore 1 Bagley, 210 ft. from E and 650 ft. from S lines of Leroy W. Ross Sur., Abst. 1352, 700-ft. test, rigging up spudder.

L. T. Burns 1 Bloodworth, 150 ft. from N and 783 ft. from W lines of Sec. 214, T.E.&L. Sur., 1,000-ft. test, location.

S. D. Glover 1 C. E. Luton, 130 ft. from S and E lines of J. L. Elmore Sur., Abst. 1421, drilling 510 ft.

Dorian & Farrell 1 Grigsby, Sec. 416, T.E.&L. Sur., 7-in. 3,972 ft., show oil 3,979-89 ft., bailed 1½ gal. oil per hour, T.D. 3,999 ft.

WEST CENTRAL TEXAS

FORT WORTH, Tex., Feb. 3.—New wildcats, a total of nine for the district, kept the West Central Texas exploratory work on the increase for another week. The new sites were distributed two each in Brown, Taylor and Fisher counties, and one each in Eastland, Jones and Throckmorton counties.

Fisher County.—In Fisher County's recently opened McCaulley area P. R. Long has staked location for his second test, 1 J. P. Maberry, a mile northeast of Sylvester and 660 ft. from the south and east lines of the A. A. Spring Survey. It is 2 miles west of F. A. Stephenson 1 Humphries, the second test in the area since the discovery.

The other Fisher County wildcat is Al Landers and H. J. Eisele, Dallas operators, 1 Mose Newman, 14 miles northeast of Sweetwater and 466 ft. from the south and east lines of the NW Section 8, Block 20, T.&P. Survey. Meanwhile General Crude Oil 12 William Flanigan, a scheduled Ordovician test in the center of the old Royston field in northeastern Fisher County, was standardizing after cementing 8¼-in. casing on top of the Mississippian lime at 5,945 ft. It is located in Section 200, E.T. Survey.

Brown County.—In Brown County two shallow wildcats were started during the week and are drilling ahead. R. Richmond 1 Petross, SW SW Section 7 H.T.&B. Survey, is drilling below 600 ft. toward a 1,200-ft. contract depth.

Johnson-Richburg-Mannon 2 Charter, NW NW Section 20, B.B.B.&C. Survey, is drilling below 400 ft. toward a 750-ft. contract depth.

Taylor County.—Taylor County's new wildcats are both relatively deep ones, being 3,850 ft. and 2,250 ft. in contract depth, respectively. The 3,850-ft. test is J. Bay Robertson and J. B. Dunigan 1 G. O. Creswell, SE SE SW G. Hancock Survey. It was first announced

(Continued on Page 77)

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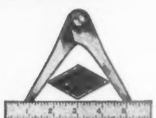

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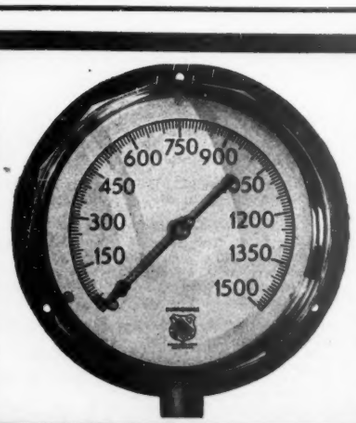

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ASHCROFT GAUGES MANNING, MAXWELL & MOORE, INC. BRIDGEPORT CONNECTICUT

Reserves in Joaquin Field Increased by Big Gasser

By GEORGE WEBER

SHREVEPORT, La., Feb. 3.—Gas development again commanded interest in North Louisiana during the past week, with new production and operations in the Joaquin field of De Soto Parish and Shelby County, Texas, and a small gas test believed flowing from the top of the Hosston or Travis Peak at Lisbon, Claiborne Parish. The Wilcox play continues strong, but further failures were marked up in Caldwell and Grant parishes.

Joaquin Active

Southern Production Co., Inc., completed 1 Alston-Frost unit for an open-flow gage of 140,000,000 cu. ft. of gas from the lower Glen Rose formation. Rock pressure was recorded at 2,422 lb. Southern has two contractors' rigs active in the field. Recently, N. & W. Corp. of Monroe staked a location in the field, on state-owned land, and this past week another location was made in Shelby County, Texas 1 fee in the Brooks Survey. With the current development, Joaquin is receiving its greatest drilling progress since the field was discovered, and a sizeable upward revision in gas reserve estimates will result from the new completions.

SUMMARY OF COMPLETIONS

North Louisiana

	No.	Bbl.	Footage
Oil wells: Caddo	4	95	5,773
Nebo	1	95	3,882
Olla	1	147	2,414
Cotton Valley	1	869	8,600
Gas wells: Lisbon	1	*3	5,395
Joaquin	1	*140	4,929
Monroe	1	*1	2,217
Dry holes: Converse	1	.....	1,994
Caddo	1	.....	1,640
Summerville	1	.....	3,197
Wildcats	3	.....	9,358
Total	16	.....	49,699

Arkansas

Dry hole: Wildcat	1	.....	206

*Million cu. ft.

Lisbon Test

C. H. Lyons et al 1-A Lloyd, in 2-20-5w, Lisbon field, last week surprised operators who had believed it a failure. The test, a former Pettit lime producer, was deepened from 5,223 ft. to 5,395 ft. to test a sand body lying in the transitional zone above or in the top of the Hosston or Travis Peak formation. A core taken at 5,306-26 ft. showed a slight odor of gas in the bottom 6 in., and the next core, taken from 5,326 to 5,338 ft., showed recovery of 1½ ft. of dense gray siltstone with slightly porous brown streaks and pin points of oil and gas odor, in the top of the core. The horizon was discounted and after carrying the hole to 5,395 ft., operators were preparing to plug when the test tried to blow out. It was controlled, and with tubing run to 5,175 ft., it gaged an open flow of 2,500,000 cu. ft. of gas. It was then pinched down on a 12/64-in. choke and gaged about 750,000 cu. ft. of gas and 3 bbl. of oil. It is not known whether the production is coming from the deeper sand or the Pettit. Testing will continue. Casing pressure during the latter gage was 590 lb. on the casing and 500 lb. on the tubing.

Wilcox Play

Caldwell Parish failed to show new Wilcox production in two wildcats last week, abandoned in 30 and 16-12-4e. Both tests were drilled several hundred feet into the Wilcox where oil sands in the Olla and Nebo fields of La Salle Parish produce. In Grant Parish another failure resulted when Bering Oil Co. abandoned 1 Goodpine, 18-8n-1w, 2,500 ft. in the Wilcox.

The Summerville field of La Salle Parish was defined last week with the failure of Peterson Petroleum Co. 2 Tremont. The test is two locations north of 1 Tremont, discovery well of the gas field. Although oil shows were encountered in both tests, in the same Wilcox horizon as at Olla, the first well was completed as a gas well, and the second, after failure to cut off salt water, was abandoned. The zone between 2,455 and 2,465 ft. was perforated several times following squeezing but salt-water production on each test prevented completion of a commercial well. Difficulty is also encountered at Olla and Nebo in shutting off salt water but thicker oil sands in these fields apparently allow more selective perforating.

New wildcat operations in the Wilcox play are beginning. In La Salle Parish Lion Oil Refining Co. and Louark Producing Co. are rigged up on two, and current drilling tests continue in La Salle, Madison and Tensas parishes.

The second deep Pine Island test, W. G. Ray Drilling Co. 1 Noel estate, last week reached contract depth at 8,510 ft. and at week's end an electrical log was being run preparatory to abandonment. The test found no oil shows of commercial importance in the Cotton Valley formation. Although two failures are marked against chances for finding deep Cotton Valley production on the Pine Island structure, it is probable that a third deep test will be drilled this year, since leasing in the area involved large expenditures. Pine Island was considered one of the principal prospects for deeper production, due to the extent of the uplift in the deeper formations.

NORTH LOUISIANA COMPLETIONS

Caddo—Caddo Parish

Gulf 11 Wadkins ..... NE SW SE 22-21-15
T.D. 1,600 ft., pumped 30 bbl., 5,000 gal. acid, 6-in. casing 1,429 ft.

Gulf 12 Wadkins ..... NW SW NE 22-21-15
Pumped 25 bbl., T.D. 1,597 ft., 5,000 gal. acid, 7-in. casing 1,426 ft.

A. R. Hancock 8 Helpman ..... NE NW SE 16-21-16
Pumped 15 bbl., T.D. 1,026 ft., 6-in. casing 1,016 ft.

G. H. Neighbors 1 Richardson 36-21-16
T.D. 1,640 ft. salt water, abandoned.

Texas Canadian Oil Co. 1 Rush & Crum ..... SW SW NW 28-21-15
Pumped 25 bbl. oil, T.D. 1,550 ft., 5,000 gal. acid, 5½-in casing 1,380 ft.

Wildcat—Caldwell Parish

D. J. Crawford et al 1 La. Central ..... SE SW 30-12-4e
Top Wilcox 1,674 ft., dry.

V. V. Ryan 1 La. Central ..... NE NE 16-12-4e
Top Wilcox 1,729 ft., dry, T.D. 3,020 ft.

Lisbon—Claiborne Parish

C. H. Lyons et al 1-A S. Lloyd ..... SE SW 2-20-5w
3,000,000 cu. ft. gas, T.D. 5,395 ft., old T.D. 5,223 ft.

Joaquin—De Soto Parish

Southern Prod. Co., Inc., 1 Alston-Frost unit ..... SE NW SE 11-11-16
140,000,000 cu. ft. gas, open flow, R.P. 2,422 lb., T.D. 4,929 ft., 7-in. casing 4,785 ft.

Wildcat—Grant Parish

Bering Oil Co. 1 Goodpine ..... SW NE 18-8-1w
T.D. 4,664 ft., dry, top Wilcox 2,141 ft.

Nebo—La Salle Parish

H. L. Hunt 10-A Goodpine ..... NW NE 17-7-3e
100 bbl., 5 per cent salt water, 12/64-in. choke, T.P. 1,225 lb., C.P. 1,400 lb., 7-in. casing 3,880 ft., top Wilcox 2,530 ft., perf. 3,530-34 ft., T.D. 3,882 ft. Wilcox.

Summerville—La Salle Parish

Peterson Pet. Corp. 2 Tremont ..... NE NW 25-9n-2e
T.D. 3,197 ft., 7-in. casing 2,517 ft., perf. 2,455-65 ft., salt water.

Olla—La Salle Parish

Placid Oil Co. 42 La. Central ..... SW NE 36-10-2
150 bbl., 2 per cent salt water, 14/64-in. choke, T.P. 300 lb., 7-in. casing 2,414 ft., perf. 2,240-46 ft., T.D. 2,414 ft. Wilcox.

Converse—Sabine Parish

A. R. Chestnut 1-B Walden ..... SE NW SE 27-10-13
T.D. 1,994 ft., salt water.

Monroe—Union Parish

Interstate Nat. Gas Co. 105 fee ..... NE NW 27-22-3e
1,000,000 cu. ft. gas, R.P. 985 lb., T.D. 2,217 ft., chalk rock.

Cotton Valley—Webster Parish

Hunt Oil Co. 1 Crichton ..... NE NW 31-21-10
869 bbl., ⅜-in. choke, T.P. 550 lb., C.P. 1,200 lb., 7-in. casing 8,600 ft., perf. 8,439-50 ft., "D" oil sand, T.D. 8,600 ft.

NORTH LOUISIANA WILDCAT REPORT

Caddo Parish

W. R. Ray Drlg. Co. 1 Noel estate ..... SE 30-21-14
T.D. shale and lime 8,510 ft., running electric log.

Claiborne Parish

F. B. King et al 1 King ..... SE NW 3-20-5w
13⅜-in. casing 610 ft., drilling 3,000 ft.

Skelly and Sunray 1 Valentine ..... NW NW 31-20-6w
Flowed 1,867,000 cu. ft. gas and 10 bbl. salt water, 1-in. choke, T.P. 175 lb., C.P. 600 lb., through perf. 5,826-34 ft., S.I.

Union Producing Co. 1-A Meadows et al ..... NE 18-21-4
Drilling shale and lime 11,109 ft.

La Salle Parish

Delta Drlg. Co. 1 Hughes ..... NE NE SW 22-8-1e
T.D. 4,002 ft., arranging deepen.

Lion Oil Ref. Co. 1 Goodpine ..... SW SW 25-9-1e
First report.

Louark Prod. Co. 1 Tensas Delta Land Co. ..... SW SE 27-6n-4e
First report.

Herman Brown 1 Ark. La. Gas Co. ..... SW NE 11-7-4
First report.

Madison Parish

H. L. Hunt 1 Lancaster .....
385 ft. W and 340 ft. N most easterly corner 3-14-12e
10¾-in. casing 321 ft., coring 3,025 ft.

Natchitoches Parish

J. E. Watts 1 Tanner ..... SW SW NW 18-10-10
Old T.D. 3,430 ft., P.B. 3,200 ft.

Sabine Parish

Roy Raines 1 Carter ..... SW NW NW 27-9-11
S.D. 2,377 ft.

Tensas Parish

Pipe & Shields 1 Panola Co. ..... SE NW 34-13-12
Drilling 2,760 ft.

Union Parish

Walter B. Reineck 4 Hudson ..... NW SE SE 7-23-1e
Rigging up.

ARKANSAS

Operations continue very quiet in South Arkansas with few wildcats of importance now active. In the Stephens area of Columbia County the Crow Drilling Co. 1 Smart encountered the top of the Smackover lime at 5,949 ft. but found the upper section to be cellular lime instead of more permeable oolitic lime. Although it shows oil, the extremely low permeability will not allow the oil to flow through the formation to the well, and the test is a failure in the Smackover. It is shut down at 6,050 ft. awaiting orders.

The deep Union County test, C. H. Murphy 1-C Cates, drilling in the South El Dorado field, cored 5,606-16 ft. and recovered porous sand showing good stain and odor of oil in the top, and salt water in the remainder of the core. In a sand topped at 5,827 ft., and cored from 5,831 to 5,838 ft., 2 ft. of firm porous and permeable sand was recovered, showing stain and odor of oil. The test is being drilled ahead below 5,970 ft.

ARKANSAS COMPLETIONS

Wildcat—Hempstead County

S. H. Cadenhead et al 1 J. J. Bruce ..... SE SE 27-10s-24w
T.D. 206 ft., abandoned.

ARKANSAS WILDCATS

Clark County

W. S. King 1 McKenzie ..... SE SE NW 30-10-19
S.D. 1,336 ft.

W. P. Wilson 1 Hamilton & Mathews ..... SW NW 32-10-20
S.D. 1,572 ft., bailed dry.

Columbia County

Crow Drlg. Co. 1 Smart ..... SW SW 12-15-20
S.D. 6,050 ft.

Nevada County

Coker & Grieves 1 Guy Thompson ..... SW SE SE 35-10-22
Cored 878-88 ft., recovered sandy shale and 6 in. shaly sand, oil odor, drlg. ahead 1,068 ft.

Coker & Grieves 2 Guy Thompson ..... SE SE 35-10-22
First report.

Prairie County

Hazen Oil Co. 1 Fidelity Mutual Life Ins Co. ..... NE NE SW 16-2n-6w
Drilling 677 ft.

Sevier County

Gramp Oil Co. 2 F. Phillips ..... SW SW SW 26-9-30
Drilling 639 ft.

Union County

C. H. Murphy 1-C Cates ..... NW SW 33-18-15
Drilling 5,963 ft., show oil 5,606-16 ft.

Woodruff County

Tatum & Watkins 1 Miller ..... SW SE SE 7-5n-2w
Drilling 1,627 ft.

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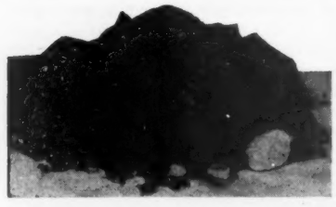

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Among the Drilling

LOFFLAND BROTHERS, Houston, Tex., have apparently opened a new field for the Texas Gulf Coast as J. Newton Rayzor 1 Christian, a wildcat located in the Chenango area, Brazoria County, showed for a producer when tested through perforated casing at 8,400 ft. In the new Willamar field, Willacy County, Texas, one rotary is operating for Pan American Production Co.

BRUCE CLARDY, drilling contractor of Dallas, Tex., is drilling at a recently started deep 8,500-ft. wildcat test in Upshur County, eastern Texas, for Sun Oil Co. It is No. 1 W. C. Henderson, Asher Survey, on the Ore City structure just outside of the town of Ore City.

TIPPETT Drilling Co., Shreveport, La., is drilling below 1,200 ft. at a wildcat test in Bowie County, eastern Texas, for A. L. Willis as his No. 1 H. L. Taylor. It is in the McClure Survey, about ¾ mile west of Redwater and on a 4,500-acre block farmed out to the operator by Phillips Petroleum Co. It is a Paluxy sand test.

GEORGE ECHOLS, Houston, Tex., is expected to cement casing for a production test in his company's (Titanic Oil Co.) 1 Natalbany Lumber Co., a wildcat located on the St. Gabriel prospect, Iberville Parish, Louisiana. The well is drilling below 8,200 ft. after an electrical survey and side-wall cores showed possible production. The contractor's 1 Marrero Land Co., the discovery well of a new field, west of New Orleans, Jefferson Parish, is flowing at the rate of 200 bbl. of fluid per day while testing through a 7/64-in. choke. Along the Texas Gulf Coast, material is being moved to the Double Gum prospect, Liberty County, where location was recently made for a deep test.

S. B. ROBERTS, contractor and independent operator of Abilene, Tex., has received contract from Fortex Oil Corp., Fort Worth, Tex., for a Palo Pinto lime wildcat test about a mile northeast of the Ivy field in Shackelford County, West Central Texas. It is 1 J. S. McKeever, 467 ft. from the north and west lines of NE NW Section 14, Block 3, H.&T.C. Survey. Rotary has been rigged up and spudding is scheduled for this week.

CROSBY Drilling Co., Houston, Tex., opened another Wilcox sand pool for the Texas Gulf Coast with the completion of M. McMurray 1 Allen, located southeast of Halletsville in Lavaca County. The well is flowing distillate from perforated casing at 8,468-71 ft., and the completion opens the first production in the county. Another possible discovery is Strake 1 Griffith, located southwest of the Alta Loma field, Brazoria County, Texas, where 7-in. casing was cemented at 10,326 ft., after the well attempted to blow out. In the Glenmora area, Rapides Parish, Louisiana, drilling was started on an 8,500-ft. contract for Lynes & Douglas.

C. T. McLAUGHLIN, INC., Midland, Tex., has been awarded drilling contract for a new 5,300-ft. Delaware lime test in Loving County, West Texas. It is the Pinal Dome Oil Corp. 1 Michigan Oil & Gas Co. in the C NW NW Section 15, Block 26-C, P.S.L. Survey, about 14 miles northeast of Mentone.

HARRY SCHOOLER, Big Lake, Tex., independent operator and contractor, has spudded his 1 Wolters, a wildcat in western Reagan County, West Texas. It is 8½ miles northwest of the Big Lake field and is scheduled to be carried to 2,800 ft. Location is NE NE NE Section 5, G.C.&S.F. Survey.

GRAY & WOLF, Houston, Tex., are in the process of testing Superior Oil Co. of California 1 McWhorter, a prospective Wilcox sand pool opener located in the Magnolia area, Montgomery County, Texas. Seven-inch casing was cemented on bottom at 9,314 ft., and the well is testing through perforated casing at 8,877-55 ft. and 8,835-28 ft.

MORRIS-HAMILTON Drilling Co., Houston, Tex., opened gas-distillate production in the Garwood area, Colorado County, Texas., with the completion of W. R. Davis Co., Inc., 1 Brownston. Drilled to a total depth of 10,012 ft. production was obtained by perforating casing in the Wilcox at 9,423-38 ft.

McDANNALD Oil Co., Houston, Tex., is preparing to core for the Wilcox in the company's wildcat located in the Cold Springs area, San Jacinto County, Texas.

ALLEN & MORRIS, San Antonio, Tex., are scheduled to test Pan American 1-B Community located about 1,000 ft. southeast of the discovery well of the Willamar field, Willacy County, Texas. The well was drilled to a total depth of 8,722 ft., and 5½-in. casing was cemented at 8,131 ft. Production in the East White Point field, San Patricio County, was extended a short distance with the completion of a well drilled for W. R. R. Oil Co. Another rotary is running in the Luby field for Seaboard Oil Co.

O'CONNOR Drilling Co. was drilling below 1,300 ft. on its 2 Lynn, NE NW 28-6-4e, in the Asher area of Pottawatomie County, Oklahoma.

RUTHERFORD Drilling Co., Houston, Tex., is reported to have received contract for an 8,000-ft. test to be drilled for the United North & South Development Co. near the Buckeye townsite in Matagorda County, Texas.

TEXON Drilling Co., Corpus Christi, Tex., is laying claim to having drilled one of the world's largest gas wells in the Chickasha field of Grady County, Oklahoma, for the Oklahoma Natural Gas Co. The well was completed last November, but has been given several tests since then. Company engineers give no official figure of the volume, but reports were current that it had been tested for as high as 440,000,000 cu. ft. The well is 1-B Sandford, W½ NW SW 23-5-8w.

PARKER Drilling Co., Tulsa, is still trying to recover drill pipe stuck at 7,776 ft. in the Gulf Refining Co. 1 Bateson, S½ SE SE 2-14n-4e, wildcat in northern Bay County, Michigan. The pipe has been stuck since the well blew out and fire destroyed the derrick. The well is now producing about 80 bbl. daily distillate crude which is bringing a reported price of $1.40 per barrel.

ROY POWERS, Mount Vernon, Ill., has started work on C. L. McGuire 1 L. M. Bland, SE NE SE 13-5n-10w, in Knox County, Indiana, just west of Oaktown. The well will test the Devonian.

SULTANA Drilling Co., Shreveport, La., has completed two large gas wells in the Joaquin field, De Soto Parish, Louisiana, for Southern Production Co., Inc. The 1 Cannon-Frost gaged 177,000,000 cu. ft. and 1 Alston-Frost was completed last week for 140,000,000, open-flow potentials. The contractor's two rigs are still active in the Joaquin field, drilling two more Southern wells in De Soto Parish and Shelby County, Texas. Sultana also has two active rigs in the district, drilling in the Atlanta field of Columbia County, Arkansas, for G. Scott

Contractors

Hammond, and in the Bisteneau field for Arkansas Louisiana Gas Co.

SHARON Drilling Co., Wichita, Kans., have shut down Willis Hartman 1 Dresback, E½ SE NE 7-21-6w, an outpost ¾ mile northeast of the Wherry pool in Rice County, Kansas, in which they have an interest, at 3,561 ft. in the Mississippian chat where some water was encountered. Earlier the well showed for a discovery in the Sooy conglomerate.

ENGLISH Drilling Co. was building rig for its 1 May in the Cement townsite pool of Caddo County, Oklahoma. Bad weather was hampering field operations in the area late last week but was clearing over the week end.

BIG CHIEF Drilling Co., Oklahoma City, Okla., have sold their interest in the Kenneth Ellison et al 1 Strange, C SW SE 27-18-4w, on the flank of the Lovell field of Logan County, Oklahoma, to Jones Associated Oil of Oklahoma City. The Strange well was drilled to 5,125 ft. to miss the Layton pay zones. It was plugged back to get water with a puff of gas in the Hoover, but did an estimated 10,000,000 cu. ft. of gas a day in the Elgin sand series at 3,350-65 ft. Casing was perforated with five shots at 3,351-55 ft.

PORTABLE Drilling Co., Tulsa, has encountered a slight delay on its 1 Conway, NE NE NE 16-23-2w, Noble County, Oklahoma. Crews were fishing at a total depth of 4,772 ft. The hole is bottomed in the Mississippi lime.

FRED C. SUMMERS, Seminole, Okla., together with P. S. Dahl of Blackwell, has taken over 1 Rudolph, NE NE SW 27-29-1w, northwest of the Braman area in Kay County, Oklahoma, and is due to test the Wilcox sand. The wildcat was started in 1938 and carried to the top of the Mississippi at 3,490 ft. with rotary. Later it was deepened to 3,580 ft. with rotary tools where work was suspended. It was shut down until the spring of 1939 when the hole was deepened to 3,646 ft., but tools were stuck at 3,621 ft. and work again suspended. Recently Dahl acquired interest of the early holders, cleared titles and made a deal with Summers for going to 3,700 ft., or the Wilcox.

BURR LAMBERT, Centralia, Ill., has set casing on his 1 Hattie Golder, SW NE NE Section 29-5s-14w, White County, Illinois. The test is the north offset to the discovery well of the South New Harmony pool. Tar Springs pay was topped at 2,406 ft. A test will also be made of the Waltersburg formation in the well.

SHARON Drilling Co., Wichita, Kans., and Isern Brothers, Hutchinson, Kans., topped the Topeka lime at 2,605 ft. on their 1 Lillard, SW SE 6-16-11w, Barton County, Kansas. The Lansing lime was found at 2,955 ft. and the test is drilling ahead at 2,964 ft. The test site is east of Beaver and is about 2 miles north of the Prusa pool.

BIG WEST Drilling Co., Dallas, Tex., is moving a rig into the Joaquin field, Shelby County, Texas, for the Texas Co.'s deep 1 fee.

RHODES Drilling Co., Abilene, Tex., is rigging rotary derrick in southern Fisher County, Texas, for its scheduled 3,500-ft. wildcat on the Mose Newman ranch. The test will be drilled by Al Landers and H. J. Eisele, Dallas, on a block assembled by the Coronado Exploration Co., which company based structural work on a seismograph-shooting survey. Location is 466 ft. out of the SE cor. NW Section 8, Block 20, T.&P. Survey, 14 miles northeast of Sweetwater and 6 miles southeast of Longworth.

BIG CHIEF Drilling Co. has staked location for a test in the Lancaster pool of Wabash County, Illinois. The test, 1 Schrader, is to be located in Section 27-2n-13w.

LONG & WOLF, of Graham, Tex., is rigging for a wildcat in the McCaulley area of northeastern Fisher County, Texas, the P. R. Long 1 J. P. Maberry, 1½ miles northeast of Sylvester and 2 miles west of the F. A. Stephenson et al 1 J. P. Humphries, now standardizing after setting casing. This is the second location Long has recently made in the area. The Long 1 Maberry is 660 ft. out of the southeast corner of A. A. Spring Survey.

JOE MURPHY, Centralia, Ill., was nearing completion on his 1 Braemier, SW NE NE 29-3s-4w, in the McKinley pool of Washington County, Illinois. The well was showing for about 150 bbl. daily from a total depth of 1,044 ft. Production is from the Bethel sandstone, the discovery well in the pool being completed in that formation during the middle of December.

UNITED Drilling Co. has staked location for its 1 Correll in Section 27-2n-13w. The well is in the Lancaster pool, which is having a revival of activity following an extension well.

W. I. (BILL) LEWIS, Mount Vernon, Ill., got a dry hole on his 1 German, SW NW SW Section 12-2s-1e, Jefferson County, Illinois. The test, an outpost to the Roaches pool, was carried to the McClosky lime.

J. M. Fendley, production superintendent for H. C. Cockburn, and R. F. McClain of the Frazier Drilling Co., on derrick floor of the discovery well of the Dyersdale field, Harris County, Texas

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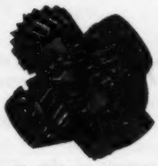

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T. R. INGRAM

Wertz Field Extended Short Distance by 900-Bbl. Well

DENVER, Colo., Feb. 3.—The Rocky Mountain area had five completions, with aggregate initial production of 1,607 bbl. Best well was Sinclair-Wyoming 16-A Wertz, in the Wertz field, Carbon County, Wyoming, for 900 bbl. from the Tensleep, marking a slight extension of the proven area. Second best producer was a Sunburst sand well in the Cut Bank field, Montana, in Texas Co. 2 Aronson, which swabbed 592 bbl. first 24 hours. Glacier Production 2 Winkler, Cut Bank, made 110 bbl., and Prevol & Shay 1 Government, in Kevin-Sunburst, pumped 5 bbl. The Vickers Petroleum-Continental test in northeastern Wyoming, on the Government Canon structure, was dry and abandoned.

One new operation was reported in Moffat County, Colorado, a second test on Dry Lakes. Ohio Oil Co. spudded in an inside well in the Rock River field in Wyoming. Lance Creek had three new operations, and Minnelusa Oil Corp. 4 Joss is shut down for orders. Last named is an outside well on west side. Cut Bank and Kevin-Sunburst each had one new operation.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Wyoming			
Oil wells	1	900	6,227
Dry holes	1	.....	2,476
Total	2	.....	8,703
Montana			
Oil wells	3	707	7,786

The Wyoming Legislature will consider a measure to authorize the state to become a member of the interstate oil compact. Repressuring of the Leo horizon in Lance Creek began this week.

COLORADO

Boulder County

Bartson Oil 1 Chenburg.....SW SW SE 15-2n-70w
Standing 110 ft., 12½-in. at 65 ft.
J. A. Warren 3 Maxwell.....NW NE NW 24-1n-71w
Drilling 1,133 ft. in fireclay and thin shells with show oil.

El Paso County

F. F. Hintze 1 State..... CEL SE SE 16-11s-60w
Drilling shale 1,765 ft., carrying 6⅝-in., probably in rotten shale near base of the Foxhills.

Huerfano County

I. E. Sideman-White 1-X Martinez SW NE 33-26s-67w
Drilling 1,650 ft.

La Plata County

Nick Spatter 1-X Bryce.....SW SW 31-33n-9w
T.D. 4,400 ft., cementing caves.

Larimer County

E. P. Gallup 1 Hanson.....C SE NW 36-10n-71w
Depth not reported, considerable water trouble.

Las Animas County

Barney Oil 1 Dutto-Marchisio....NW NW 32-33n-62w
Drilling 1,005 ft.

Logan County

West Plains 1 Sheldon.....SE NW SW 3-10n-55w
Drilling 3,412 ft. in shale.

Moffat County

C. R. Privett et al are moving in for a test on Dry Lakes structure 1¼ miles south of Steamboat Springs Synd. 1 Sutton. Contract calls for spudding in March.

Mountain Fuel Supply 2-A Musser, Powder Wash field, an outpost well, 1 mile southeast of 1 Musser, completed in 1931 at 2,152 ft. for 34,180,000 cu. ft. of gas, has penetrated several thin sands with varying results and is drilling ahead. Sand at 2,121-24 ft. showed for 888,000 cu. ft.; at 2,161-67 ft., 967,000 cu. ft.; 2,220-24 ft., salt water; 2,248-49 ft., 240,000 cu. ft.; 2,253-73 ft., salt water.

C. R. Privett 1 Strelling.....NE SE SE 12-5n-96w
Moving in, first report.
Steamboat Springs Synd. 1 Sutton NE NE SW 1-5n-96w
T.D. 2,335 ft., show oil with water, moving in 5-in. for shutoff.
Mountain Fuel Supply 2-A Musser..... CWL NW SE 4-11n-97w
Drilling 2,323 ft.

Park County

South Park Oil 1 Lamar .....NE NE SE 34-11s-75w
Drilling 7,725 ft.

Rio Blanco County

Texas-California 5 Unit.....NW NE NE 34-3n-94w
Drilling 6,086 ft.

Routt County

Mid-Colorado Pet. 1 Omholt.....NE NE SE 29-4n-87w
T.D. 3,160 ft., 2,600 ft. water in hole, cementing 6⅝-in.

WYOMING

Big Horn County

McDonald & Curtis 1 Orchard ....SE NW 24-51n-93w
Drilling 1,465 ft., deep test. Torchlight field.

Carbon County

Sinclair-Wyoming 16-A Wertz, SW SW SW 6-26n-89w, an outpost in the Wertz field, was completed in the Tensleep at 6,227 ft., total depth, for an initial production of 900 bbl. in 24 hours. The 7-in. is at 5,851 ft., 2 ft. in the Tensleep. Top of the Sundance was at 4,075 ft. It is a northwest offset to 13 Wertz, which made 803 bbl. a day at 6,230 ft., and marks a slight extension of the proven area. Next completion due is 15-A Wertz, an outpost on the southeast, the distance between the two wells being ¾ mile.

Ohio Oil Co. has begun drilling on its 12 State in Rock River field, for which location was released a year ago. In the meantime it went one location to the northwest and drilled 2 Lundy to the base of the Dakota series where it was abandoned last week.

Crook County

Vickers Petroleum-Continental Oil 1 Duncan-Lobban, NE NW SW 28-57n-64w, Government Canon structure, was plugged and abandoned at 2,476 ft. It had water in most all of the sands all the way down. The top of the Minnelusa, in which is located the Lance Creek pays, was at 1,480 ft.

Natrona County

Royal Oil Corp. 1 Midert.....SW SW SW 26-35n-80w
Drilling 1,509 ft. in Steele shale.
Casper Creek Oil Co. 1 State SW SW SW 36-36n-81w
Drilling 2,268 ft., additional show of gas.

Niobrara County

Repressuring of the Leo sands in the area operated by the unit in Lance Creek began this week following the construction of increased compressor capacity at the Continental gasoline plant. Present work is preliminary to test out the system and some adjustments may be necessary before results are apparent. The unit operators are the Ohio, Argo, Buck Creek, and Continental companies. Last September the Minnelusa Oil Corp. began repressuring wells on the Thompson lease on the west side of the field outside of the unit. Repressuring of the Sundance sand within the unit began in February 1938.

Minnelusa 4 Joss, SW NE SW 6-35n-65w, an outside well on the west side, is shut down for orders at 5,474 ft. It had the top of the Leo at 5,302 ft. Last test showed 150 bbl. of fluid, of which 5 bbl. were oil. It is located ¾ mile south of two wells on the same contour which missed the Leo altogether and ran into an overthrust. It is north of some producers on the same contour.

Park County

Stanolind Oil & Gas Co. is going back into its 1 Rosenberg, near center of the Frannie field, and drill it deeper with cable tools. It was completed by the old Midwest Refining Co. late in 1929 at 2,825 ft. in the Tensleep. On a 65-day pumping test it averaged 631 bbl. a day during the last 10 days of the test. It had the top of the Tensleep at 2,796 ft.

Stanolind 1 Rosenberg.....NE NE NE 26-58n-98w
T.D. 2,825 ft., preparing to drill deeper.
Resolute 2 State.....SW SW 16-57n-101w
T.D. 10,121 ft., recemented whipstock at 7,408 ft., redrilled to 7,954 ft. and S.D.

Platte County

Dividend O. & R. 1 Johnson.....NW SW 17-24n-66w
S.D. 3,814 ft. for casing.

Sublette County

Klumpe Syndicate 1.....NE SW NE 28-27n-113w
Drilling 1,700 ft., show of gas at 1,512 ft.

Texas 1-C Government.....SW NW NW 24-27n-113w
Spudded.

Sweetwater County

Sinclair-Wyoming 95-A.....SW NW NW 11-26n-90w
Drilling 1,425 ft.
Rocky Mountain Drlg. 1 State SW SW SW 36-20n-104w
S.D. 3,974 ft. for orders, no oil or gas.

MONTANA

Big Horn County

Big Horn Oil & Gas 44.....NW SE NE 16-1s-33e
Drilling 640 ft. Hardin district.

Blaine County

Montana Gas 2 Bjornsen.....SE NE NW 34-32n-19e
Cemented 8¼-in. at 765 ft.

Cascade County

Bushford Pet. Synd. 1 Shannon-Roberts.....
C SW NE 12-20n-1e
Drilling 3,190 ft. Vaughn district.

Daniels County

Copan O. & G. 2 Wiley.....NW NW NW 10-36n-50e
T.D. 1,928 ft., ready to resume drilling with rotary.

Fergus County

Hess & Tony 1 State.....CWL SW NE 36-22n-17e
Cemented 7-in. at 414 ft.

Glacier County

Texas Co. had one of the best completions of the year in Cut Bank in 2 Aronson, C NW SW 21-35n-6w, an outside well on the west side of the field in what is known locally as the Lander pool, the production coming from the Sunburst sand at 2,953-80 ft., total depth being 2,990 ft. It swabbed 592 bbl. in 24 hours. The main pay was at 2,954-70 ft. It is a south offset to the same company's 5 Tweedy, completed a year ago for only 10 bbl. a day in the Sunburst. Most of the Cut Bank production comes from the Cut Bank sand, but to the north of this well there have been several good producers in the Sunburst, including Santa Rita 1 Lander, the largest well ever completed in the field.

Glacier Production 2 Winkler, C NE SE 28-33n-5w, swabbed 110 bbl. first 24 hours at 2,956 ft., total depth, from the Cut Bank at 2,914-54 ft., the main pay being at 2,945-54 ft. The Sunburst was at 2,859-82 ft., with a show of oil at 2,867-72 ft.

Phillips County

Montana-Dakota 623.....C NW NE 34-32n-33e
Cemented 5½-in. at 701 ft.

Toole County

Kevin-Sunburst had one completion in Prevol & Shay 1 Government, C SW NW 15-35n-3w, which has been standing since last October after acidizing without results. It was put on the pump and is making 5 bbl. a day. It had the contact at 1,800-05 ft., which was dry, and drilled on down to 1,840 ft., where it ran into water. It was then plugged back to 1,817 ft.

NORTHWEST NEW MEXICO

Bernalillo County

David H. Boyd 1 Wright 11-10n-5e
Spudded to 55 ft. and S.D.

San Miguel County

Southwest Drilling, Inc., 1 Conchas NW NE 34-17n-21e
T.D. 2,735 ft., recemented 8¼-in. at 2,635 ft.

San Juan County

Carroll & Carroll 2 Government C NW NW 12-29n-12w
Drilling 550 ft.
Southern Union Prod. 1 Cornell-Government.....
C SE SW 12-29n-12w
Spudded.
Red Cactus Oil 1 Tribal.....SE SE SE 35-29n-18w
Set 6⅝-in. at around 800 ft.

Torrance County

Cardinal Oil Co. 1 State.....SE SW 3-8n-14e
Drilling 250 ft.
Orville J. Lee 1 Milburn..... C NW SW 36-7n-7e
Rigging up.
J. P. Stewart 1 Laman ..... C NW NE 3-3n-12e
T.D. 776 ft. in gray lime, fishing.

UTAH

Box Elder County

Northern Oil 1.....NE SW 17-13n-4w
Resumed at 386 ft. and drilling ahead at 475 ft.

Summit County

Longwell Pet. Co. 1.....SE SW SE 35-3n-5e
Drilling 3,546 ft. in brown limy shale with show of gas, 4¾-in. at 3,528 ft.

Kentucky Fields

(Continued from Page 62)

6 bbl. at 840 ft. Same operator 9 W. Townsend, on South Fork, 2 bbl. at 865 ft.

Roe Faulkner and Levi Goff 3 Miller-Prewitt & Goff, on Miller Creek, dry at 850 ft.

Pike County

Ky-W. Va. Gas Co. 606 J. S. Cline, on Island Creek. T.D. 1,087 ft. in Salt sand, 316,000 cu. ft. of gas in 40 hours, 280 lb. rock pressure.

Floyd County

Ky.-W. Va. Gas Co. 5280 Samuel Justice, on Justice Branch of Left Beaver Creek, T.D. 2,802 ft., in shale, 64,000 cu. ft. of gas, 48 hours, rock pressure 251 lb.

Ky.-W. Va. Gas Co. 5281 Joe Stumbo, on Branham Creek, T.D. 3,559 ft., in shale, 169,000 cu. ft. gas, 24 hours, rock pressure 305 lb.

WESTERN KENTUCKY

Daviess County

Handyville district: Teller 1 George P. Baird, dry, T.D. 1,435 ft.

Utica district: The Petroleum Co. et al 3 L. N. Burns, 12 bbl., natural, McClosky 1,692-1,708 ft., will acidize.

Hancock County

Pellville district: Leeper Oil Co. 7 Ira Jett, 10 bbl., 80-qt. shot, Barlow sand 672-708 ft., T.D. 737 ft.

Henderson County

Hebbardsville district: Connell 2 Cooksey Bennett, 85 bbl., Jett sand 1,505-07 ft.

McLean County

Glenville district: Ohio 9 R. L. McManama, Acct. 1, 10 bbl., 50-qt. shot, Cunningham sand 1,468-80 ft., T.D. 1,690 ft., P.B. to 1,480 ft.

Island district: Roy Mace et al 2 J. S. Fitzhugh, location.

Nuckols district: Ellis 1 Mrs. Agnes Wright, dry, T.D. 1,642 ft.

Ohio County

Sunnydale district: E. E. Brown 2 Lee Lewis, south tract, dry, T.D. 396 ft.

Dehart 3 Lee Lewis, north tract, rigging up.

Fordsville district: R. R. Hart 5 Carl Seaton, 10 bbl., 40-qt. shot, Jett sand 286-94 ft., T.D. 325 ft.

Haynesville district: Glen Chancellor 1 J. W. Christian, dry, T.D. 356 ft.

Pellville district: M. I. Parks 4 J. E. Lowe, dry, T.D. 688 ft.

Webster County

Sebree district: J. R. Powell et al 1 Mrs. B. H. Ramsey, old gas well drilled deeper, dry, T.D. 1,411 ft.

West Central Texas Fields

(Continued from Page 72)

about a week ago and is starting operations this week.

Projected to 2,250 ft. and scheduled to start this week is the J. T. Anderson 1 Eula T. Stith, 6,640 ft. from the west and 330 ft. from the north lines of the R. Turner Survey 25.

Jones County.—In Jones County T. D. Humphrey is drilling below 2,600 ft. at 1 Norwood, a recently started 2,750-ft. test, 2,100 ft. from the north and 330 ft. from the west lines of the E½ Section 18, Block 15, T.&P. Survey.

As a shallow 900-ft. wildcat just east of Carbon. Douglas Tomlinson, Jr., and associates have started 1 Bennett, 220 ft. from the south and east lines of the NE Section 6, Block 2, H.&T.C. Survey.

Throckmorton County.—Throckmorton County's new operation is Rathke Oil of Wichita Falls 1 W. T. Swaggerty, 495 ft. from the north and 745 ft. from the east lines of SW Section 258, B.B.B.&C. Survey. It is a projected 5,300-ft. test and has been spudded with cable tools.

WEST CENTRAL TEXAS COMPLETIONS

(24-hour gages)

Brown County

Wildcat: Johnson-Richburg-Mannon 1 S. M. Charter, show gas 400-25 ft., dry at 639 ft.

Salt Creek field: Owenby Drilling Co. 1 Steele, 4,830,000 cu ft. gas, 1,666-96 ft., P.B. 2,409 ft., 2,000 gal. acid.

Bryd Store field: Elmore Oil 2 Cox, 87 bbl., pumping, 20-qt. shot, 2,305-65 ft.

Callahan County

Hatchett field: Johnson-Holmes 1 Hickman, dry at 452 ft.

Wildcat: J. L. Reeves and E. P. Campbell 1 Estes, SW part Sec. 4, Blk. 8, S.P. Sur., abandoned location.

Comanche County

Wildcat: Comanche Oil & Gas 1 McGuire, 2,313 ft. from N and 1,500 ft. from E lines of G. Rockefeller Sur. 3, top Ellenburger 3,032 ft., show oil 2,627-300 ft., dry at 3,218 ft.

Eastland County

Carbon field: E. L. Pinkston 1-A Morris, 150 bbl., pumping, 340-qt. shot 2,537-2,634 ft.

Hamilton County

Wildcat: C. J. Meyers 1 Oats, 420 ft. from S and 1,036 ft. from E lines of F. Hughes Sur., top Marble Falls 3,419 ft., Mississippian lime 3,827 ft., Ellenburger lime 3,839 ft., dry at 3,867 ft.

Jones County

Olson field: King Oil 2 Seth, 317 bbl., flowing, ⅝-in. choke, 3,232-41 ft.

Wildcat: Humble Oil 2 Sears, SW SW SW Sec. 37, Blk. 18, T.&P. Sur., flowed 702 bbl. in 14¾ hr., ¾-in. choke, 3,010-22 ft., casing record, 15½-in. 133 ft., 12½-in. 855 ft., 10-in. 1,824 ft., 8¼-in. 2,179 ft., 6⅝-in. 3,011 ft.

Shackelford County

Ghio field: Georgian Oil 19 Blach, dry at 551 ft.

Georgian Oil 20 Blach, abandoned location.

Lynch field: J. B. Lynch 1 Lynch, abandoned location.

Albany field: R. H. Roark 1 Montgomery, dry at 920 ft.

Semiwildcat: L. H. Choate 2 Green, SW SW NE Sec. 61, Blk. 12, T.&P. Sur., dry at 872 ft.

Nail field: Hickok Prod. and Reynolds 11-A Nail, 40 bbl., 1,521-27 ft.

Tarrant County

Wildcat: T. Johnson and Mann 1 Cannon, 1,500 ft. from N and 150 ft. from E lines of V. J. Hutton Sur., dry at 869 ft., water in Paluxy sand from 639-869 ft.

E. E. Hoffpauir 2 Davis, 1,192 ft. from S and 984 ft. from W lines of NE cor. of S 288 acres of N 538 acres of Hiram Blackwell Sur., Pat. 3-1197, dry at 2,140 ft.

WEST CENTRAL TEXAS WILDCAT REPORT

Brown County

A. J. Stokes 1 B. S. Bayston, 210 ft. from SE line and 2,962 ft. from SW line of Prosper Mangel Sur. 604, top Marble Falls 1,559 ft., underreaming 5⅛-in., (corrected top).

Johnson-Richburg-Mannan 1 Charter, SW SW Sec. 19, B.B.B.&C. Sur., 750-ft. test, drilling 382 ft.

R. Richmond 1 Petros, SW SW Sec. 7, H.T.&B. Sur., 1,200-ft. test, drilling 520 ft.

Johnson-Richburg-Mannon 2 Charter, NW NW Sec. 20, B.B.B.&C. Sur., drilling 382 ft.

Callahan County

W. D. Austin 1 I. N. Jackson, 150 ft. from N and W lines, Sec. 2, C.&M. Sur., underreaming casing 850 ft.

(Continued on Next Page)

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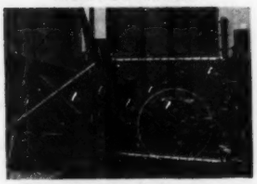

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WRITE TO HARLEY SALES CO. 510 ATLAS BLDG., TULSA, OKLA. M & M BLDG., HOUSTON, TEXAS

Large Gas Field Indicated by Second Ravenswood Test

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Feb. 3.—During the past week in the lower eastern fields 14 operations were completed, of which 1 was dry, 10 gas wells, 4 input wells for shallow water flooding and 3 oil producers with a daily initial of 57 bbl.

WEST VIRGINIA

Another wildcat scheduled for the Oriskany sand is starting in Jackson County, West Virginia, where the United Carbon Co. is rigging up to start 1 D. F. Hyre in Ripley district. It is located 1½ miles of Lat. 38° 50' and 3.7 miles west of Long. 81° 35'. It is close to the Spencer-Ripley highway.

A wildcat in Ravenswood district, Jackson County, is showing for a good gas well in the Oriskany sand. On the F. F. Starcher farm Columbian Carbon Co. topped the Corniferous lime at 5,198 ft. and the Oriskany at 5,316 ft. At 5,352 ft. or 36 ft. in the sand there had been a gas volume as high as 4,000,000 cu. ft. a day which, due to freezing at the sand, is now somewhat lower. This test is approximately 4 miles south of the 6,000,000-cu. ft. a day Oriskany gas well on the P. F. Riggs farm ½ mile south of Odaville, and is, from geophysical research, apparently not related to the Elk-Poca extension in lower Jackson County.

In this district the same company topped the Corniferous lime at 4,949 ft. in the wildcat on the F. L. Roliff farm and has cemented casing and resumed drilling. This will also be of interest as it is also miles distant from other Oriskany tests. Here the Boggess Drilling Co. is fishing at 1,100 ft. in the test on the Mary Smith farm.

In Braxton County Ed Robinson and H. R. Weaver are completing a wildcat on the A. L. Morrison farm in Holly district. The Gordon stray sand was topped at 2,166 ft. and at 2,169 ft. it gaged 405,000 cu. ft. gas a day. This test is remote from any oil or gas pool. It is located in the Sutton quadrangle 4.75 miles south of Lat. 38° 45' and .37 mile west of Long. 80° 40'. It is about 2 miles N 60° E of the town of Sutton and about 12.7 miles northeast of the oil and gas pool developing in Birch district, Braxton County.

In Harrison County the deep rotary test of the Hope Natural Co. on the C. S. Gribble farm in Grant district is drilling at 9,815 ft. and in a very hard formation.

In Kanawha County, no hole was made in the test drilling to the Clinton sand on the John Price farm and the Copenhaver heirs farm in Poca district.

SUMMARY OF COMPLETIONS

West Virginia

	No.	Bbl.	Footage
Gas wells: Oriskany field	3	*5.2	15,005
Other fields	2	*0.2	5,255
Oil wells	3	12	5,833
Dry holes	1	.....	3,100
Total	9	.....	29,193

*Million cu. ft.

Southwest Pennsylvania

Gas wells	5	*0.5	15,835

Boone County

Scott district: Owens, Libby-Owens 33 Cassingham Coal Land Co., 109,000 cu. ft. gas, Berea sand, T.D. 2,114 ft.

Doddridge County

West Union district: R. J. Braden Co. 9 R. D. and E. E. Swiger, 8 bbl. and 150,000 cu. ft. gas, Big Injun, T.D. 2,127 ft. This is on Bullitown Run of Nutter Fork among small oil wells.

Kanawha County

Big Sandy district: Rex Oil & Gas Co. 1 J. S. Gandee et al, 1 bbl., Weir sand, T.D. 1,946 ft.

Ritchie County

Clay district: Howard Hall (First National Bank of St. Marys) 5 W. C. Butcher, 3 bbl. and 40,000 cu. ft. gas, Keener sand, T.D. 1,760 ft.

Wayne County

Union district: Gas Corp. 1 E. M. Nease, 94,000 cu. ft. gas, Big lime 1,191-1,357 ft., Injun 1,367-1,495 ft., Berea 1,988-97 ft., brown shale 2,558-2,878 ft. and 3,098-3,140 ft., Corniferous lime 3,140 ft., gas 2,685 and 2,750 ft. Not enough to test before shot. T.D. 3,141 ft.

Wetzel County

Proctor district: Manufacturers Light & Heat Co. 2 August Blatt, dry, Gordon sand, T.D. 3,100 ft.

ORISKANY GAS FIELDS

Kanawha County

Poca district: United Fuel 4893 K. E. Legg, 47,000 cu. ft. gas before shot, Corniferous lime 4,676 ft., Oriskany sand 4,776 ft., T.D. 4,835 ft.

Godfrey L. Cabot 5 J. L. McLean heirs, 1,220,000 cu. ft. gas before shot, Corniferous lime 4,871 ft., Oriskany 4,969 ft., T.D. 4,996 ft., Godfrey L. Cabot 7 J. L. McLean heirs, 3,951,000 cu. ft. gas before shot, Corniferous lime 5,019 ft., Oriskany 5,108 ft., T.D. 5,174 ft.

SOUTHWEST PENNSYLVANIA

On Chestnut Ridge in South Union Township, Fayette County, another deep well is starting about 1¾ miles southwest of the most southern deep gas well on the Indian Creek Coal Co. lease. The new test is New Penn Development Co., William E. Snee et al 2 Indian Creek Coal Co. (John McKissack warrant) and is located 1,400 ft. west of the Ridge Road and 500 ft. south of the north property line.

Here Peoples Natural Gas Co. topped the Onondaga chert at 6,801 ft. in 3 Piedmont Coal Co. and at 6,815-18 ft. the first gas was struck in the chert beds. It gaged 230,000 cu. ft. a day, initial. With drilling, the gas volume declined steadily until at 6,861-62 ft. an additional gas pay was struck which only partially replaced the initial volume. It is now drilling at 6,880 ft. or 79 ft. below the top of the chert.

In this township this company's No. 4 is drilling at 1,650 ft. New Penn Development Co., William E. Snee et al are drilling 3 Summit Hotel at 5,685 ft. with the brown shale topped at 5,585 ft. In North Union Township, Wasson & Co. et al made no progress during the week.

In Beaver County, L. D. McMichaels et al are drilling at 2,500 ft. in the deep test on the Elmer Pflug farm on Big Knob in New Sewickley Township.

Armstrong County

Boggs Township: J. K. Sharp & Co. 1 James Sefton, 31,000 cu. ft. gas, Murraysville and Bradford sands, T.D. 3,470 ft.

Burrell Township: Apollo Gas Co. 1 O. J. King, drilled deeper, 83,000 cu. ft. gas, Bradford sand, T.D. 3,412 ft.

Plum Creek Township: Peoples 3 Mrs. John Boyer, 66,000 cu. ft. gas, after shot, Bradford sand, T.D. 3,635 ft.

Fayette County

Nicholson Township: Duquesne 1 Louise Collins, 171,000 cu. ft. gas, Thirty-foot sand 2,042-96 ft., gas 2,074 ft., Fifth sand 2,425-2,505 ft.; gas 2,435-40 ft., T.D. 2,641 ft.

Washington County

Amwell Township: Carnegie 1 D. C. Blake, 189,000 cu. ft. gas, Fifty-foot sand 2,519 ft., gas 2,604-07 ft., T.D. 2,677 ft.

West Central Texas Fields

(Continued from Preceding Page)

B. C. Mann 1 Windham, 990 ft. from N and 330 ft. from W lines, SE Sec. 154, G.H.&H. Sur., show oil 980-85 ft., T.D. 1,006 ft., may deepen.

Reeves & Sorrell 1 Young, 1,980 ft. from N and 660 ft. from E lines, Sec. 37, B.B.B.&C. Sur., H.F.W. 1,975-2,000 ft., 6⅝-in. 2,000 ft., waiting on cement.

Coleman County

A. P. Heinze 1 J. Kincaid, 467 ft. from N and W lines of E½ SW Sec. 41, B.B.B.&C. Sur., 3,800-ft. test, show gas 3,387 ft., drilling 3,485 ft.

L. J. Derrick 1 J. W. Vance, 330 ft. NW of old Texas 1 Vance, also in Sec. 101, E.R. Sur., 2,100-ft. test, location.

R. H. Murray 1 Morris, 467 ft. S and W of NE 160 acres of J. Greenwood Sur. 304, T.D. 1,440 ft., last report.

M. R. Stuard 1 Minear, 330 ft. from N and 1,850 ft. from E lines of 300-acre tract in E. Votaw Sur. 244, location.

Cooper Brothers 1 McClure, 1,100 ft. from S and 2,400 ft. from W lines of T. R. Frizzell Sur. 711, 2,800-ft. test, rigging up rotary.

Comanche County

Campbell 1 Stark, SW part of Asa Hoxey Sur., S.D., repair 145 ft., will set 6⅝-in.

Natural Resources 1 Armor, Sec. 105, T.&N.O. Sur., 5 mi. NE of Eden, cleaned out to old T.D., prepare to resume drilling, no report.

Concho County

Floyd C. Dodson 1 Robert Wilson, Thomas Green Sur., 10 mi. SW Eden, show oil and gas 3,792-95 ft., 3,819-20 ft., at 3,828-29 ft., showed 1 bailer water per hr., may drill deeper.

Eastland County

C. D. Lane 1 Mason, 900 ft. from N and 750 ft. from W lines of W½ NE Sec. 13, D.&D.A. Sur., drilling 995 ft.

W. M. Morris 1 Carrie Bryant, 1,520 ft. from N and 200 ft. from W lines of SE Sec. 20, Blk. 1, H.&T.C. Sur., 6⅝-in. 825 ft., show gas 912-25 ft., S.D.

Hickok Oil 1 Luse & Gray, NE Sec. 486, S.P. Sur., Ordovician test, ¾ mi. SE of new McElreath field, 4,250-ft. test, drilling 2,085 ft.

A. A. Hutton 1 W. Penn, NW SE Sec. 11, Blk. 2, B.B. B.&C. Sur., 600-ft. test, location.

Douglas Tomlinson, Jr., et al 1 Bennett, NE NE NE Sec. 6, Blk. 2, H.&T.C. Sur., 900-ft. test, drilling 200 ft.

Erath County

W. A. Young 1 J. B. Mills, J. Harvey Sur., 5 mi. NW of Dublin, T.D. 212 ft., cleaning out hole.

Fisher County

F. A. Stephenson 1 Maberry, SE SW Sec. 56, Blk. 1, H.T.&B. Sur., 3,400-ft. test, cored 3,285-3,302 ft., recovered sand showing oil, top Swastika 3,277 ft., 40-gravity oil, deepened to 3,315 ft., swabbed 90 bbl. daily, 40-qt. shot, cleaning out.

General Crude Oil 12 Flanigan, center of old Royston field, Ordovician test, drilling 5,925 ft.

F. A. Stephenson 1 Humphries, NW NW Sec. 49, Blk. 1, H.T.&B. Sur., 3,350-ft. test, drilling 2,785 ft.

P. R. Long 1 W. F. Davidson, SE NW Sec. 59, Blk. 1, H.T.&B. Sur., 4,300-ft. test, location.

Hamilton County

A. J. Caldwell 1 W. W. Jones, 1,002 ft. from NE, 150 ft. from SE lines, W. H. Crowder Sur., drilling past bit 3,002 ft.

Falls Ref. Co. (formerly Wallace & Vickers) 2 Lund, C S½ of 20 acres of N½ of SW¼ R. J. Bailey Sur. 51, T.D. 3,953 ft., prepare to P.B. to shut off 9 bbl. sulfur water per hour from 3,863-3,953 ft., top Ellenburger 3,853 ft.

Gunther & Smith 1 Thompson, 467 ft. from SE and 4,533 ft. from SW lines of Rhody Kennedy Sur., spudded and S.D.

Hensley & Watson 1 Manning, 467 ft. from W and 2,500 ft. from S lines of Apago Gaithan Sur., rotary on location.

Bob Walters 1 Oates, 3,350 ft. from SE and 8,450 ft. from NE lines of F. Hughes Sur., S.D. 350 ft., may change operators.

Jones County

Shaheen Oil 1 Young, 1,630 ft. from N and 300 ft. from E lines, S. Andrews Sur. 191, 2,500-ft. test, S.D., repairs.

Danciger O. & R. 1 H. E. Gale, NE NE Subd. 91, De Witt C.S.L. Sur., 2,500-ft. test, drilling 1,878 ft.

H. Hines and W. D. Brookover 1 A. N. Wimberly, SW SW Subd. 91, De Witt C.S.L. Sur., 2,500-ft. test, spudding.

Fain-McGaha Oil 1 Moore, 660 ft. from NE and 1,320 ft. from SE of S 107 acres of J. D. Maltby Sur. 252, 2,500-ft. test, drilling 665 ft.

T. D. Humphrey 1 Norwood, SW NE Sec. 18, Blk. 15, T.&P. Sur., 2,750-ft. test, drilling 2,600 ft.

Gillespie 2 Young, NE NE Sec. 53, O.A.L. Sur., drilling 1,120 ft.

McCulloch County

W. J. Willard E. B. Garrett, 467 ft. from N and E lines of Sur. 934, Abst. 1196, 3,000-ft. test, drilling 310 ft.

Menard County

Harry Baldwin 1 Leggett, SW SW Sec. 1, B.S.&F. Sur., gas 1,250-52 ft., gaged 2,000,000 cu. ft. daily, preparing to complete.

Palo Pinto County

Wilcox O. & G. 1 Rogers, 467 ft. from S and E lines, Sec. 894, T.E.&L. Sur., drilling 2,915 ft.

Georgian Oil 1 Weldon, A. J. Smith Sur., Abst. 383, H.F.W. 2,121 ft., T.D.

E. Guyer 1 Dalton, L. B. Dalton Sur., Abst. 153, show gas 3,827-53 ft., show oil and gas 3,879-81 ft., bailing live oil, some water coming in behind 8¼-in. casing at 1,930 ft., T.D. 3,851 ft. (corrected steel-line measurement).

Elgin & Watson 1 Watson, NE NW Sec. 10, Blk. 2, T.&P. Sur., S.D. 4,065 ft.

Hickok Prod. and Reynolds 1 J. R. Halsell, 467 ft. from S and W lines, Sec. 92, B.B.B.&C. Sur., Abst. 105, 5,500-ft. test, spudded and S.D.

Shackelford County

Georgian Oil Corp. 2 Blach, 1,290 ft. from SE and 540 ft. from SW lines, Sec. 301, T.E.&L. Sur., deep test, spudded and S.D.

R. T. Nail 1 Cook, 150 ft. from N and W lines of SE SW Sec. 53, E.T. Sur., show oil 897-905 ft., T.D. 1,120 ft., preparing to test.

Stonewall County

Shell 1 Rutherford, 2,310 ft. from N and 330 ft. from E lines, Sec. 144, Blk. 1, H.&T.C. Sur., coring 5,916 ft.

Runnels County

A. J. Johnson 1 Bert Fletcher, E. W. Bull Sur. 333, 5,500-ft. test, S.D. 515 ft.

Taylor County

Ce-Beth Oil 1 City of Abilene, south shore of Lake Abilene on city property, 4,000-ft. test, running 10-in. casing 2,300 ft.

J. Bay Robertson and J. B. Dunigan 1 G. O. Creswell, SE SE SW G. Hancock Sur., 3,850-ft. test, location.

J. T. Anderson 1 Eula T. Stith, 6,640 ft. from W and 330 ft. from N lines of R. Turner Sur. 25, 2,250-ft. test, location.

Wilcox Pool Opened in Lavaca County, Other Tests Show Oil

By NEIL WILLIAMS

HOUSTON, Tex., Feb. 3.—Additional light was thrown upon the Texas Gulf sector of the Wilcox trend as one new field was opened in Lavaca County, and another Wilcox test located in the Magnolia area, Montgomery County, was in the process of completion. Other developments of interest centered in Brazoria County as one wildcat located in the Chenango area is reported to have shown promise of commercial

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	8	1,528	56,585
Gas wells: Fields	2	.....	12,730
Total	10	.....	69,315

production, while at the Halls Bayou area, casing was cemented in a deep test following an attempted blowout.

M. McMurray et al opened the district's first field of the year and the first production for Lavaca County with the completion of 1 A. C. Allen which at the end of the week was flowing at the rate of 6 bbl. of 51-gravity straw-colored distillate per hour through a 4/64-in. choke. Tubing pressure was 2,275 lb. and shut-in casing pressure 2,250 lb. This well was drilled to a total depth of 8,523 ft. and 7-in. casing was cemented several weeks ago at 8,522 ft., but due to unfavorable weather conditions completion was delayed. After testing 130 ft. of 42-gravity oil and 1,360 ft. of salt water at 8,492-8,501 ft., the hole was plugged back to 8,478 ft. and final completion was made by perforating casing at 8,468-71 ft.

The field is located in the M. Muldoon Survey, approximately 12 miles southeast of Hallettsville in the southeastern part of the county. It is on strike with the Thomaston field in De Witt County and approximately 5 miles southwest of the Sheridan field in Colorado County. This particular sector of the trend has received an extensive leasing play within the past few months as the result of recent developments.

Wilcox Trend Play

Garwood.—Southeast of the above discovery, and located in the Garwood area, Colorado County, W. R. Davis Co., Inc., 1 Brownston, E. Wooley Survey, flowed 83 bbl. of 52.1-gravity distillate per day through a 4/64-in. choke. Tubing pressure was 1,650 lb. and casing pressure 1,675 lb. The completion of the well opens another Wilcox producing area, production being from perforations at 9,423-38 ft.

Magnolia.—In Montgomery County and located in the Magnolia area, Superior Oil Co. of California 1 McWhorter, a Wilcox test, was in the process of testing several showings logged in the Wilcox. The well is bottomed at 9,314 ft., with 7-in. casing cemented on bottom, and the company was preparing to retest after salt water with a slight show of oil was recovered from perforated casing at 8,877-55 ft., and 8,835-28 ft. The Wilcox was topped at 8,465 ft., and electrical survey and sidewall cores showed favorable indications. The contract depth of this well is 10,000 ft., and unless production is opened from the present depth the well is expected to be drilled deeper.

Three other Wilcox tests located along the trend have reached critical stages and the outcome will probably be determined within the next few days. In the Cold Springs area, San Jacinto County, McDannald Oil Co. 1 Foster Lumber Co. was bottomed at 7,426 ft., and preparations were being made to core for the Wilcox. In southern Grimes County R. A. Irwin 1 Southern Lumber Co. was drilling in shale below 7,438 ft., and was reported to be in the Wilcox, although the top of the section was not released. The other test is John A. Deering 1 H. C. Buck, Washington County, which is drilling below 7,000 ft.

Chenango Test

The Chenango area, Brazoria County, was in the limelight as J. Newton Rayzor 1 J. W. Christian is reported to have shown for a producer while testing at 8,565-74 ft., but final completion has been delayed due to salt-water intrusion. This well, which is located on a farmout lease from Sun Oil Co., has been drilled extremely tight and very little information is available. The operator reports that the well flowed at the estimated rate of 28 bbl. of fluid per hour for 4 hours through a ¼-in. choke before it began to show salt water. Tubing pressure was 1,200 lb. and casing pressure 1,250 lb. Gravity of the oil was estimated at 34°. The well has been killed and another test is expected to be made in the same section. Total depth of the hole is 9,510 ft., and 5½-in. casing was cemented at 8,600 ft.

Halls Bayou.—Approximately 3 miles southwest of the Alta Loma field, and located in the Halls Bayou area, Brazoria County, Strake Petroleum Co., Inc., 1 Griffith is preparing to drill ahead after cementing 7-in. casing on bottom at 10,326 ft. The well attempted to blow out at a depth of 10,298 ft. and working pressure on the drill stem built up to 6,500 lb. While bleeding off the pressure the well showed gas-cut drilling mud. An electrical survey was made before casing was cemented, but details as to what it showed were not available.

Rowan.—The 8,500-ft. discovery pay in the Rowan field, Brazoria County, was apparently defined on the north side as Humble 3 Hubbard flowed salt water at 8,550-56 ft. and the company is attempting to complete as a gas-distillate well at 8,940-46 ft.

South China.—Pan American 1 Community, southwest of production in the South China field, Jefferson County, recovered 75 ft. of distillate and tested 3,550 lb. working pressure when tested at 7,860-75 ft. The well is being retested after making a cement squeeze job.

TEXAS GULF COAST COMPLETIONS

Brazoria County

Old Ocean field: Harrison & Abercrombie 1 Carson-Brockman, 300 bbl., ¼-in. choke, top sand 10,020 ft., T.D. 10,490 ft.
West Columbia field: Hogg 2-A Hogg, 305 bbl., 4/64-in. choke, top sand 4,572 ft., T.D. 4,606 ft.

Harris County

Fairbanks field: Stanolind 12 Jahnke, 148 bbl., ¼-in. choke, perf. casing 6,834-39 ft., T.D. 6,840 ft.

Jefferson County

Lovells Lake field: Humble 26 Broussard, 86 bbl., 9/64-in. choke, top sand 7,803 ft., T.D. 7,811 ft.

Polk County

Segno field: Gulf 46 Wing, 351 bbl., ¼-in. choke, sand 8,033-46 ft., T.D. 8,052 ft.

Tyler County

Joe's Lake field: Republic 49 fee, 188 bbl., ¼-in. choke, top sand 7,677 ft., T.D. 7,710 ft.
Spurger field: Republic 6 fee, gas well, perf. casing 4,920-28 ft., T.D. 7,500 ft.

Wharton County

Hillje field: Texas 1 Appling, gas well, T.D. 5,230 ft.
Magnet field: Humble 33 Cockburn, 57 bbl., ½-in. choke, top sand 5,534 ft., T.D. 5,536 ft.
Withers field: Texas 87-C Pierce, 93 bbl., ½-in. choke, top sand 5,299 ft., T.D. 5,540 ft.

TEXAS GULF COAST DRILLING REPORT

Chambers County

Gulf 1-R State, Red Fish Reef field, coring sandy shale 10,645 ft.
Humble 8-A-223 State, Red Fish Reef field, T.D. 10,924 ft., cutting sidewall cores.
Humble 9-A-223 State, Red Fish Reef field, drilling shale 10,687 ft.
Humble 10-A-249 State, Red Fish Reef field, T.D. 9,885 ft., fishing.

Statewide Map Co., Houston

M. McMurray et al 1 Allen, new Wilcox discovery in southeastern Lavaca County, and W. R. Davis Co., Inc., 1 Brownston to the southeast in Colorado County, which opened distillate production from the Wilcox sand in the Garwood area

Grimes County

R. A. Irwin et al 1 South Texas Development Co., R. O. Lusk Sur., drilling shale 7,438 ft.

Hardin County

W. G. Christian 1 Guedry, drilling shale and lime 6,080 ft.

Matagorda County

Cities Service 1 Duffy, J. W. E. Wallace Sur., drilling shale 7,075 ft.

Washington County

John Deering 1 H. C. Buck, James Lynch Sur., drilling shale 7,160 ft.

ILLINOIS FIELD REPORT

By

STAFF CORRESPONDENT

Trenton Possibilities of Salem Are Still in Doubt

MATTOON, Ill., Feb. 3.—The number of completions in Illinois during the past week showed a small increase with the completion of 51 wells as compared to 46 for the preceding week. Wildcat activity in the state, however, continued its decline with only one new wildcat location reported during the week. White County still remains the most active in the state due to development of the East Calvin and North New Harmony pools. Development of the North New Harmony pool is steadily increasing, making the pool one of the most active in the state.

The Trenton lime possibilities of the Salem pool are still vague as Paul Rossi continues efforts to complete his discovery well, 8 Brooks, on pump. Production of this well was over 200 bbl. a day when first drilled in but has declined to 40 bbl. a day at the present time. This is much less than the well is believed capable of producing and, consequently, no initial production test has been made. None of the other Trenton operations had reached the Trenton at the end of the week.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: East Calvin	7	804	19,325
Hoodville	5	932	15,327
Louden	4	498	6,255
North New Harmony	5	1,183	14,263
North Noble	2	120	5,577
Omaha	3	640	5,178
Springerton	2	197	6,487
Storms	2	216	4,565
West Liberty	1	1,124	2,811
Other pools	2	309	6,332
Wildcats	2	148	3,645
Dry holes: Fields*	3	.....	2,487
Wildcats	13	.....	29,635
Total	51	.....	121,887
Salt-water disposal wells	2	.....	3,142
Recompletions	4	721	.....

*Westfield, 2; Louden, 1.

St. Peter Test

Early last week operators in the Salem field learned that Texas 21 E. Tate, NE NW NW 5-1n-7e, a supposed Trenton test in the south part of the field, will be drilled to the St. Peter sandstone for the first test of this formation in the Salem pool. The Texas Co. plans to assemble only geological information in drilling the test from the Trenton to the St. Peter and announced that none of its findings will be disclosed. The company does not plan to complete the well in the St. Peter regardless of its findings but will plug back and produce from the Trenton, providing satisfactory saturation is found in that horizon.

At the end of the week 21 E. Tate was reported drilling and coring at an unknown depth in the Trenton lime which was topped at 4,514 ft. If saturation is found in paying quantities at the Tate well, a flurry of drilling will probably be assured in the south part of the field such as began about 2 miles northward when Paul Rossi recovered saturation in the Trenton at 8 Brooks. With the exception of 21 E. Tate, all Trenton operations in the Salem pool at the present time are in the area near the Rossi well.

The only other St. Peter test in Marion County, Martin et al 1 Robinson, SW SE SW 4-2n-1e, in the Sandoval field, failed to find a commercial showing and was plugged. This test was completed a few weeks ago and, to the present time, there have been very few St. Peter tests in Illinois.

Omaha Pool Development

Development of the new Omaha pool of Gallatin County indicates that the pool may be a nice producer. The discovery well, Cameron 1 Rister, NE NE NW 4-8s-8e, was initialed at 317 bbl. Three wells completed in the pool during the past week produced a total of 644 bbl. initially. The smallest of these, Cameron 2 Robinson, SE NW NW 4-8s-8e, pumped only 20 bbl. following shots in the Palestine at 1,710-20 ft. Carter 2 A. Kinder, direct east offset of the discovery well, produced 381 bbl. initially while Carter 1 A. Kinder, SW SW SE 33-7s-8e, produced 239 bbl. A direct north offset of Cameron 2 Robinson was completed recently and found dry. This indicates that the discovery well is probably very near the west edge of the pool. All wells completed in the pool so far are producing from the Palestine. Nearest other production to the Omaha pool is about 7 miles north in the Irons pool of White County.

ILLINOIS COMPLETIONS

Clark County

Westfield pool: Wisconsin 1 Cunningham, SW SW SW 34-12n-14w, dry, T.D. 358 ft.
H. R. Hull 2 Briscoe, NE SW SW 32-12n-14w, dry, show 400-42 ft., T.D. 482 ft.

Clinton County

Centralia pool: Adams 29 Copple, NW NE SW 35-2n-1w, salt-water-disposal well, input 5,000 bbl. into Warsaw 1,947-50 ft.
Wildcat: Venuto 1 J. P. Taylor, NE NE SE 15-1n-1w, dry, dry, Aux Vases 1,505 ft., T.D. 1,531 ft.

Effingham County

Louden pool: R. Troupe 2 LaCrone, SE NW SW 7-8n-4e, dry, showed 2 bbl. oil and 4 bbl. water, T.D. 1,647 ft., P.B. 1,552 ft.
Wildcat: Minerva 1 Burns, SE NE 22-6n-5e, location abandoned.
Hinkle 1-C Townsite, SW SW NE 22-6n-5e, location abandoned.

Fayette County

Louden pool: Carter 8 G. P. Owen, SE SE SW 8-7n-3e, swabbed 78 bbl., 100-qt. shot, Cypress 1,505-45 ft., T.D. 1,582 ft., P.B. 1,548 ft.
Magnolia 38 T. C. Clow, NW SW NE 5-7n-3e, pumped 333 bbl., 20 and 40-qt. shot, Benoist 1,515-31 ft.
Carter 1 J. W. Lancaster, SW NW NE 10-8n-3e, pumped 78 bbl., Cypress 1,499-1,533 ft., T.D. 1,600 ft., P.B. 1,550 ft.
Carter 1 N. S. Sloan, SW SE NE 35-9n-3e, swabbed 9 bbl. in 9 hr., 30-qt. shot 1,524-37 ft., T.D. 1,542 ft.
St. James pool: Zephyr 1 Smith, NE SW SW 31-6n-3e, salt-water-disposal well, sand 1,127-92 ft.
Wildcat: Texas 4 E. Maxwell, NE NE SW 19-6n-3e, location abandoned.

Franklin County

Wildcat: Bordon 1 B. McKenzie, NW SW NW 20-6s-3e, location abandoned.
H. H. Wegener 1 C. W. & F. Coal Co., SW NE SW 19-6s-3e, dry, base Pennsylvanian 1,729 ft., Menard 2,049 ft., Glen Dean 2,278 ft., T.D. 2,289 ft.

Gallatin County

Omaha pool: Carter 2 A. Kinder, NW NW NE 4-8s-8e, pumped 381 bbl., 20-qt. shot, Palestine 1,683-1,700 ft.
Cameron 2 Robinson, SE NW NW 4-8s-8e, pumped 20 bbl., 20 and 50-qt. shots 1,710-20 ft., T.D. 1,727 ft.
Carter 1 Kinder, SW SW SE 33-7s-8e, pumped 239 bbl., 20-qt. shot, Palestine 1,701-36 ft., T.D. 1,751 ft., P.B. 1,718 ft.
Wildcat: J. B. Williams 1 Doherty, E½ NW 24-8s-9e, rig abandoned.

Hamilton County

Hoodville pool: Hinkle 2 L.&N.R.R., E½ SE NE 34-5s-6e, old well drilled deeper, old T.D. 2,973 ft., Aux Vases 3,050 ft., 10-qt. shot 3,054-64 ft., pumped 504 bbl. Aux Vases and Benoist, est. 40 bbl. Benoist.
Texas 5 Hood, NE NE NW 3-6s-6e, flowed 400 bbl., Aux Vases 3,036-44 ft., T.D. 3,047 ft.
Texas 4 Hood, SE NW NW 3-6s-6e, flowed 246 bbl., 12-qt. shot, Aux Vases 3,030-54 ft. and Benoist 2,928-54 ft., T.D. 3,054 ft.
Texas 1 H. A. Chaney, SE SE NW 3-6s-6e, flowed 90 bbl., 7-qt. shot, Aux Vases 3,069-84 ft. and Benoist 2,966-86 ft., T.D. 3,084 ft.
Carter 3 Friel, SE SW SE 27-5s-6e, pumped 38 bbl. oil and 7 bbl. water, 10-qt. shot, Benoist 2,950-57 ft., T.D. 3,068 ft., P.B. 2,957 ft.
Texas 1 Cary-Hood Consol., NE SE NW 3-6s-6e, flowed 158 bbl., 10-qt. shot, Aux Vases 3,064-74 ft.
Wildcat: R. F. Voorhees 1 Doke, NE NW NE 35-3s-5e, location abandoned.
Kingwood-Exchange 1 Weir, NW NE NE 36-5s-6e, dry, Clore 2,125 ft., Menard 2,281 ft., Vienna 2,410 ft., Glen Dean 2,517 ft., Cypress 2,782 ft., Benoist 3,009 ft., Aux Vases 3,100 ft., Ste. Genevieve 3,133 ft., T.D. 3,315 ft.

Jasper County

West Liberty pool: Pure 2 Lill Hall, E½ NW SW 17-5n-10e, flowed 1,124 bbl., 5,000 gal. acid, McClosky 2,784-90 ft., 2,804-11 ft., T.D. 2,811 ft.
Wildcat: L. M. Delatine 1 J. Huddleston, S½ SW NE 9-8n-10e, dry T.D. 2,557 ft.

Jefferson County

Wildcat: Vawter 1 Modglin, NW SE SW 9-1s-1e, dry, T.D. 2,334 ft.

Lawrence County

Wildcat: H. Hays 1 Griggs, SW SW 12-3n-13w, dry, T.D. 305 ft.

Madison County

Wildcat: Harr & Seigler 1 Bellin, NW NW SE 17-4n-5w, dry, T.D. 655 ft.

Marion County

Wildcat: Obering & Phillips 1 Thalman, NW NW NW 35-4n-1e, pumped 48 bbl., Cypress 1,349-63 ft.
Alisher & Booth 1 Hoffman, NW NW NW 31-4n-3e, dry, T.D. 2,251 ft.

Richland County

North Noble pool: Pure 5-B Cagel, NE NW NW 25-4n-9e, pumped 38 bbl., 30-qt. shot, Cypress 2,568-82 ft.
Pure 2 M. Rose, N½ NE SW 7-4n-10e, pumped 82 bbl., 5,000 gal. acid, McClosky 2,962-70 ft., T.D. 2,995 ft.

Shelby County

Wildcat: Guild et al 1 Hunter, NE SE NE 7-10n-3e, dry, T.D. 1,741 ft.

Wabash County

Wildcat: Hays & Yingling 1 Fischer, SW NW NW 18-1s-13w, dry, Cypress 2,523 ft., Benoist 2,656 ft., Ste. Genevieve 1,751 ft., T.D. 2,890 ft.

Wayne County

North Enterprise pool: Pure 3 H. G. Garrison, E½ NE SE 35-2n-7e, pumped 97 bbl. oil and 2 bbl. water, 1,000 gal. acid, McClosky 3,026-33 ft., 3,046-48 ft., T.D. 3,090 ft.
Wildcat: Poorman & Nation 1 Lloyd, NW NE NW 19-2s-8e, dry, T.D. 3,490 ft.
Pure 1 Cora Johnson-B, W½ SW SW 9-1n-8e, dry, Glen Dean 2,482 ft., Cypress 2,655 ft., Ste. Genevieve 2,967 ft., T.D. 3,040 ft.

White County

East Calvin pool: N. Duncan 7 Hughes, NE SE SE 17-4s-14w, pumped 150 bbl., 47-qt. shot, Benoist 2,692-2,720 ft.
N. Duncan 4 Hughes, NE SE SE 17-4s-14w, pumped 125 bbl., 30-qt. shot, Paint Creek 2,703-20 ft.
Delta Drlg. 1 Boltinghouse, NW NE NW 16-4s-14w, flowed 250 bbl., Cypress 2,585-2,607 ft., Aux Vases 2,820-58 ft., T.D. 2,858 ft.
Bell Bros. 3 W. L. Skiles, NE NW SW 16-4s-14w, swabbed 110 bbl., 60-qt. shot, Aux Vases 2,838-65 ft.
Herndon 5 J. A. Bond, SW SE SE 5-4s-14w, swabbed 113 bbl., 60-qt. shot, Aux Vases 2,804-20 ft., T.D. 2,824 ft.
Skelly 5 Daly, trustee, SE NE SW 17-4s-14w, pumped 35 bbl. oil and 15 bbl. water, 5-qt. shot, Cypress 2,583-94 ft.
Skelly 1 Crossville, NW NW NE 20-4s-14w, pumped 21 bbl., 15-qt. shot, Cypress 2,593-2,607 ft., T.D. 2,744 ft., P.B. 2,609 ft.
Mill Shoals pool: Johnson 1 A. J. Poorman, NE NW SE 19-3s-8e, pumped 212 bbl., 30-qt. shot, Aux Vases 3,204-42 ft.
North New Harmony pool: Superior 8 E. M. Fitton, SW SW SW 23-4s-14w, old well worked over, was producing 77 bbl., 14 per cent water, perf. 2,586-95 ft. in Cypress and Waltersburg, pumped 103 bbl. in 13 hr., 20 per cent b.s. and w.
Superior 6 E. M. Fitton, SW SW NE 27-4s-14w, old well worked over, was producing 52 bbl., drilled removable pipe and perf. 2,590-2,610 ft. in Waltersburg, pumped 76 bbl. in 18½ hr., 18 per cent b.s. and w.
Superior 2 B. S. Collins, SE SE SE 22-4s-14w, pumped 233 bbl. oil and 65 bbl. water, 10-qt. shot, 2,660-68 ft., McClosky 2,907-9 ft. (dry), T.D. 2,930 ft.
Yingling 1 Ford heirs, SE NE SW 22-4s-14w, pumped 38 bbl., 15-qt. shot, deepened from 2,618-20 ft.
Superior 1-A E. M. Fitton, SW SE SE 28-4s-14w, pumped 376 bbl., 80-qt. shot, Benoist 2,703-30 ft., saturation in Waltersburg 2,110-50 ft., Cypress 2,557-2,608 ft.
Tide Water 13 Dennis, NE NW NE 33-4s-14w, pumped 172 bbl., St. Louis 2,913-15 ft., McClosky 2,893-4½ ft., Aux Vases 2,819-47 ft., Tar Springs 2,175-86 ft., T.D. 2,917 ft., P.B. 2,735 ft.
Tide Water 14 Dennis, SW NW NE 33-4s-14w, flowed 140 bbl., 10-qt. shot, Benoist 2,709-37 ft., also McClosky 2,950-56 ft., show oil 2,126-48 ft., T.D. 2,956 ft.
Tide Water 15 Dennis, NW NW NE 33-4s-14w, flowed 262 bbl., 40-qt. shot, Benoist 2,710-36 ft., T.D. 2,730 ft.
Springerton pool: Nation 1 John Darbe, N½ SW NE 31-3s-8e, pumped 184 bbl., 37-qt. shot 3,219-49 ft.
W. W. Gray 2 fee, SW NW NE 31-3s-8e, pumped 13 bbl. oil and 8 bbl. water, 60-qt. shot, Aux Vases 3,232-38 ft.
Storms pool: Exchange & Ohio 3 Holderby, NE NE NE 11-6s-9e, pumped 21 bbl. oil and 15 bbl. water, 7-qt. shot, Waltersburg 2,273-78 ft., T.D. 2,283 ft.
Skelly 2 Wilson, NE SW NE 11-6s-9e, flowed 195 bbl., 10-qt. shot, Waltersburg 2,271-82 ft.
Wildcat: H. R. Rhodes 1 H. R. Golden, SW SE NE 29-5s-14w, pumped 100 bbl., Waltersburg 2,254-82 ft.
O'Meara Bros. 1 O. L. Hon, NW NE NE 30-4s-14w, dry, T.D. 3,237 ft.

OLD COMPLETIONS NOT PREVIOUSLY REPORTED

Clinton County

Wildcat: D. S. Parshall 1 Dixon, SE SW NE 6-3n-2w, location abandoned.

Fayette County

Wildcat: Kingwood 1 Dayton, E½ NW SE 14-6n-1w, dry, Devonian 2,792 ft., T.D. 2,946 ft.

Montgomery County

Wildcat: National Pet. 1 Bost, SW SW SW 4-8n-2w, dry, Ste. Genevieve 1,215 ft., T.D. 1,254 ft.

ILLINOIS DRILLING REPORT

Alexander County

E. Solomon 1 U. S. Brown.....NE NE NE 15-15s-3w S.D. 30 ft.

Clark County

Shawver & Gallatin 1 Howard ...SE SE NE 25-10n-14w Putting on pump, T.D. 1,450 ft.

Clinton County

Hughes 2 Holman.....NE SW SE 10-2n-1w S.D. 880 ft.

Illinois Drlg. 1 Stacy Cemetery ....SE SE SW 36-2n-1w Set 10-in. 70 ft., S.D. 85 ft.

J. F. Ashoff 1 Lampen.....NW NW NW 16-1n-2w Spud.

Kreigh 1 Kampworth .....NE NW NW 8-1n-3w Set 4½-in. 983 ft., saturation 984-95 ft., T.D. 1,000 ft.

Crawford County

L. A. Plumb 1 Snider .....W½ NW SW 27-6n-12w S.D. 600 ft.

Ford County

Nelson et al 1 Erp.....SW NW SE 19-24n-7e Drilling 2,480 ft.

Franklin County

Taylor Drlg. 1 Malkey heirs .....SE SE SE 13-6s-2e Drilling 1,560 ft.

E. S. Adkins 1-B Orient Coal .....SE NE NW 12-7s-2e T.D. 2,809 ft., P.B. 1,950 ft., drilling plug.

Gallatin County

Snowden-McSweeney 1 Egyptian T. & T. ..... SE SW SE 18-8s-10e Set 10-in. 136 ft., drilling 1,800 ft.

Cameron Bros. 1 J. B. Green .....NW SE SW 4-8s-8e T.D. 1,720 ft., P.B. 1,718 ft.

Greene County

Scroggins 1 McVay .....SW NE 4-10n-11w Drilling 535 ft.

Hancock County

Sam Tate et al 1 J. Rice ..... SW NE NW 28-4n-5w Drilling 1,785 ft.

Jackson County

Barton & Shipmen 1 P. Maharry ..NE NE SE 20-9s-3w Drilling 520 ft.

Jasper County

Pure 1 C. C. Price .....W½ SW SW 16-6n-10e Acidized 5,000 gal. acid, P.O.P.

Jasper Oil 1 Poehler.....N½ NE NW 7-5n-10e Fluid level 100 ft., perf. to swab, P.B. 2,820 ft.

Jefferson County

Whisenant & Trenchard 1 Grant..NW NW SW 29-3s-3e Kinderhook 1,740 ft., Palestine 1,998 ft., Menard 1,999 ft., Glen Dean 2,204 ft., Fredonia 2,737 ft., drilling 2,805 ft.

Johnson County

Benedum-Trees 1 Cavitt ..... SW SW NW 24-11s-3e Kinderhook 540 ft., Palestine 990 ft., Menard 1,017 ft., Vienna 1,226 ft., Glen Dean 1,332 ft., Cypress 1,665 ft., Paint Creek 1,750 ft., Benoist 1,837 ft., slight show oil, Aux Vases 1,971 ft., slight show oil, drilling 2,135 ft.

Lawrence County

W. Payne 1 H. Payne ..... NW SW NW 20-3n-11w Bridgeport 1,001 ft., drilling 1,020 ft.

Robinson 1 Sauers..... NW SE NW 20-3n-12w Trenton 4,862 ft., drilling 4,980 ft.

Macoupin County

Bridge & Valbert 1 Felker .....NW NE SW 1-9n-7w Benoist 2,093-2,102 ft., Fredonia 2,330 ft., drilling 2,332 ft.

Madison County

Aich & Carroll 1 Rinkel.....SE NE NW 33-5n-6w Cleaning out 675 ft.

Wickwire & Camberling 1 Ellis ..W½ NW SE 22-3n-6w Set 6-in. 743 ft., drilling 750 ft.

Marion County

J. Dunbar 1 Fischner .....SW SW 27-3n-1e Spud 35 ft.

Paul Rossi 8 Brooks ..... SW NE SW 29-2n-2e Pumped 40 bbl. in 24-hr. test, T.D. 4,618 ft.

McDonough County

Vancroft & Bowman 1 W. A. Murray NW SE SE 8-5n-4w Devonian 602 ft., Maquoketa 653 ft., Trenton 760 ft., S.D. 902 ft.

Ripley Dome Synd. 1 T. A. Jeffries NW NE SW 21-4n-4w Acidized 500 gal., cleaning out.

McLean County

Funks Grove O. & G. 1 Crawford..NW NW NW 28-22n-1e S.D. 1,670 ft.

Montgomery County

H. C. Detrick 1 W. H. Barnes.....NW NE SE 20-10n-2w Drilling 1,170 ft.

J. Warner 1 R. DeFratus ..... SW SW SW 18-10n-4w T.D. 602 ft., setting 6-in. at 590 ft. and erecting tanks.

A. M. Lacey 2 Luddeke ..... SE NW NW 28-9n-4w Slight show oil 590-601 ft., drilling 1,460 ft.

Morgan County

C. L. Hunt 2 Cuddy .....NE NW NW 2-13n-10w Location.

Randolph County

J. R. Rankin 1 B. Bierman .....SW SW SE 3-7s-5w Menard 378 ft., S.D. 550 ft.

Richland County

M. O'Meara 1 C. Leaner ..... SW NW NE 24-4n-9e Set 5½-in. 2,533 ft., drilling plug.

Oilwell Drlg. 1 F. Hilborn ..... NW SW NE 24-4n-9e Rigging up standard tools.

Oilwell Drlg. 1 B. W. Blain ..... SE NW SW 24-4n-9e Set 8⅝-in. 96 ft., drilling 1,972 ft.

St. Clair County

S. C. Newhart 1 Miller.....NE NW NW 6-2s-6w Spud.

Saline County

Potter 1 Thaxton.....E½ NW SW 28-8s-7e Pennsylvanian 2,751 ft., Renault 2,770 ft., Fredonia 2,880 ft., set 4½-in. 2,885 ft., T.D. 2,955 ft.

Shelby County

O. C. Brunswold 1 Harley-Vantis. SW NW NW 36-13n-3e Kinderhook 2,375 ft., drilling 2,678 ft.

J. Moore et al 1 fee ..... SW SW NE 30-10n-3e Underreaming 6-in. 1,707 ft.

Tazewell County

Bartlemay 1 Mathis.....SW NW SW 24-25n-3w Drilling 695 ft.

Wabash County

Exchange 1 M. A. Strasser .... SE SW SW 3-2s-13w T.D. 2,418 ft., preparing to drill deeper.

Wayne County

C. R. Craft 1 J. F. Fischer..... SE NW NW 34-1s-7e Glen Dean 2,646 ft., base Golconda 2,860 ft., S.D. 3,160 ft.

White County

A. C. Burgen 1 Mary Kramer.....SE SW NE 36-3s-8e T.D. 3,516 ft.

J. G. Buell 1 E. Winters ..... NW NW SW 18-4s-10e St. Louis 3,303 ft., T.D. 3,317 ft., to test Benoist and Aux Vases.

C. A. Evarts 1 E. Brown..... SE NE NW 29-5s-14w Base Pennsylvanian 1,910 ft., Palestine 2,170 ft., Menard 2,237 ft., Vienna, 2,385 ft., Tar Springs 2,399 ft., show oil 2,402-23 ft., Glen Dean 2,475 ft., Barlow 2,675 ft., drilling 2,790 ft.

Bell Bros. 1 E. H. Morris ..... NW SW NW 21-5s-14w Golconda 2,528 ft., Cypress 2,667 ft., Benoist 2,812 ft., slight show oil, Ste. Genevieve 2,955 ft., drilling 2,986 ft.

R. Warren 1 Brunke-Combe (?).....SE SE NW 36-5s-9e Rig.

R. Halbert 1 Hubble ..... NE NW SW 7-6s-11e Set 10-in. 80 ft., drilling 440 ft.

Horton & Wiggins 1 J. G. Bradley Rig. SE SE NW 32-6s-10e

Mabee 1 Knight ..... SW SW SE 10-7s-9e Swabbed 5½ bbl. an hr., T.D. 3,063 ft., P.B. 2,266 ft., testing.

Jungbecker 1 J. W. Hays..... SE SE SW 16-7s-10e Tradewater 941 ft., Caseyville sand 1,170 ft., base Pennsylvanian 1,692 ft., Palestine 1,989 ft., Menard 2,025 ft., Tar Springs 2,191 ft., Glen Dean 2,305 ft., Barlow 2,506 ft., Cypress 2,523 ft., show oil, drilling 2,562 ft.

Eason 1 DeLaff .....NE SW NW 8-7s-8e Rigging up standard tools 3,195 ft.

Williamson County

Scott et al 1 Throckmorton.... NE SE NW 29-10s-2e T.D. 2,029 ft., P.B. 1,936 ft., drilling plug.

Permian Basin

(Continued from Page 69)

SOUTHEAST NEW MEXICO COMPLETIONS

Eddy County

Root field: Ployhar-Tallmadge 1 State, SE NE SE 2-17-29, pumped 42 bbl., 540-qt. shot, 2,490-2,660 ft., P.B. from 2,690 ft.

Barnsdall 5-B Dodd, NW NE 11-17-29, dry at 2,831 ft., 100-qt. shot at 2,550 ft.

Grayburg-Jackson field: Premier Oil 5-B Beeson, NW SW SE 27-17-30, flowed 124 bbl., open tubing, 180-qt. shot, 3,247-57 ft.

Artesia field: Ployhar 1 Spurck-State, NW NE SE 24-17-27, flowed 300 bbl., naturally, 465-90 ft.

Dayton field: Suppes & Suppes 1 Rogers, SE SW NE 10-18-26, dry at 1,134 ft.

Lea County

Mattix field: Republic 3 Davis, SW NE SW 34-23-36, 20,000,000 cu. ft. gas, naturally, 3,357-3,448 ft., 3,623 ft., T.D.

Lynn field: Olsen Oil 1-B Blinebry, C SW SW 34-23-37, flowed 93 bbl. in 14 hr., open tubing, 320-qt. shot, 3,470-3,570 ft.

Cooper sand field: E. G. Rodman 1-L Humble-State NE NE NE 32-24-37, flowed 135 bbl., open tubing, 340-qt. shot, 3,462-3,551 ft.

Wilson field: Wilson Oil 9 Shell-State, SE SW NW 7-21-35, pumped 54 bbl., open tubing, 290-qt. shot, 3,678-3,759 ft.

SOUTHEAST NEW MEXICO WILDCAT REPORT

Chaves County

L. E. Elliott 1 State .....NW NE 16-11-31 Drilling 390 ft.

Roxana Oil 1 Maull .....NE NW 11-12-25 S.D. 460 ft.

A. F. Pierce 1 Franks ..... SE NW NW 17-9-25 T.D. 990 ft., P.B. 887 ft., shot 40 qt. 864-87 ft., cleaned out and prepare to test.

Helmes-Martin 1 Stephens..... C NW NE 22-15-29 Old well drilling deeper, T.D. 3,210 ft.

H. Steinberger 1 Headley..... NW SW 26-14s-29e T.D. 3,405 ft., sulfur water 3,400-05 ft.

R. I. Wilson 1 L. B. Brown .....C NW SW 29-11-23 10-in. 295 ft., drilling 320 ft.

Eddy County

G. M. Cone 1 Hare.....NW NW NE 14-16-28 Old well drilling deeper, T.D. 1,830 ft., showing est. 250,000 cu. ft. gas daily.

A. & M. Pet. 2 State..... NW SE 15-21-27 T.D. 584 ft., P.B. 582 ft., W.O.C.

Mac T. Anderson 1 Brainard.....NE NE 28-18-27 Drilling 2,177 ft.

Jack Harris 1 Josey.....SW SE 19-20-23 T.D. 643 ft.

Jones & Yates 1 Everest.....NE SE 15-18-26 270-qt. shot 1,934-84 ft., and 670-qt. shot 1,485-1,710 ft., casing collapsed, squeezed off casing, S.D.

Fulton 1 Johnson.....NW SE 22-19-27 T.D. 1,849 ft., P.B. 1,645 ft., 230-qt. shot 1,752-1,645 ft., filled 400 ft. with oil and water after being cleaned out, 5½-in. casing at 1,442 ft., swabbed 27 bbl. oil, 5 hr., pumped 20 bbl. daily.

Truett & Tallmadge 1 Rudahl .....NE SE 2-20-24 Recementing split casing at 540 ft., T.D. 1,842 ft., drilling out cement.

Otero County

Otero Oil 1 State.....SE NW 5-22-10 Reaming 8¼-in. at 1,190 ft., T.D. 1,240 ft.

R. H. Ernest 1 Located Land Co.....SE SE 20-25-7 T.D. 3,843 ft.

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THORNHILL-CRAVER COMPANY

HOUSTON

Princess Discovery Rated 520-Bbl. Well; Second Test Started

By VICTOR LAURISTON

CHATHAM, Ont., Feb. 3.—Crude production from all Alberta fields in 1940 is officially reported at 8,494,500 bbl. valued at $10,440,000. The total includes 8,098,000 bbl. of limestone crude from Turner Valley; 354,900 bbl. of naphtha and natural gasoline from gas wells and absorption plants in the same field; and 41,600 bbl. of crude from fields outside Turner Valley. Total crude production from Alberta in 1939 was 7,594,411 bbl.

Turner Valley Allowables

Aggregate allowable for 131 Turner Valley crude wells for the month of January has finally been set at 738,233 bbl., representing a daily average of 23,814 bbl. Foothills Oil & Gas 5, in North Turner Valley, is the largest producer, with 598 bbl. a day. Other major producers are: Home Oil 5, with 586 bbl.; Alberta Oil Income 2, with 512 bbl., and Calmont-Northwest 2, with 462 bbl. All except the last named are in North Turner Valley.

Steveville Field

Formal recognition of the Steveville area in eastern Alberta as a producing area under the name of the Princess field has been given by R. E. Allen, chairman of the Alberta Conservation Board, in the following statement: "On December 31, 1940, the Standard Oil Co. of British Columbia first placed on production its 2 Princess, located in LSD 3, 13-20-12w4. This well is located on lands of the Canadian Pacific Railway Co. approximately 1 mile north of Princess Station on the C.P.R. and about 6 miles east of the town of Patricia. The well was completed at a depth of 3,920 ft. with casing cemented at 3,220 ft., and is producing sweet oil of 26.3 A.P.I. gravity. Its current productivity is rated at 520 bbl. daily of oil and 12,750,000 cu. ft. of gas. The production performance of this well to date together with its physical characteristics indicate that it is a commercial well and may accordingly be classified as the discovery well of a new oil field. The board is, therefore, pleased to recognize 2 Princess as the discovery well of the Princess oil field and congratulates the Standard Oil Co. of British Columbia for the discovery that has rewarded its faith in the oil prospects of Alberta, and John Galloway, geologist, whose knowledge and perseverance led to the discovery of this new field."

Location for Standard 3 Princess has been made in LSD 5, 13-20-12w4, nearly ½ mile northwest of the discovery well. The latter will be shut down till Standard 3 is completed and meanwhile arrangements will be made for marketing the crude. Several other companies are planning to drill.

The Alberta Conservation Board has issued regulations covering drilling in the Princess field, which is specified as Townships 19, 20, and 21, Ranges 11 and 12s, of the Red Deer River. Well spacing is restricted to one well for 80 acres, all wells to be located in the center of a legal subdivision. Drilling permits are required and will be limited to the odd-numbered LSD's of each section.

Turner Valley Lime Tests

North Turner Valley: Home Oil 1, LSD 8, 33-20-3w5, finished at 8,010 ft. tested 25 bbl. an hour from stray lime sections and 50 bbl. from the upper porous zone. The lower zone is acidizing and testing, with indications of a major producer. Home Oil 6, LSD 8, 28-20-3w5, finished at 8,446 ft., is acidizing and testing.

West Central field: Royalite Oil 54, LSD 1, 7-19-2w5, finished at 7,367 ft., is acidizing and testing. Royalite 53, LSD 4, 19-19-2w5, finished at 7,668 ft., 445 ft. in the Madison, and is testing production. Royalite 55, LSD 7, 7-19-2w5, is rigging.

North Turner Valley: Atlas 1 British Dominion, LSD 4, 17-21-3w5, is rigging.

Clearwater structure: Ram River Oils 2, 1-37-11w5, is below 2,184 ft. after encountering a fair gas show at 2,080 ft. and small crude showings at 2,140 ft. and 2,150 ft. Clear Oils 1, LSD 8, 2-35-10w5, is fishing at 650 ft.

Border Fields

Blood Indian Reserve: Northwest-West Petroleum 1, LSD 3, 20-5-23w5, is deepening from 6,186 ft. after drill-stem tests of a porous zone in the top of the Madison limestone failed to develop production. Production is expected around 6,300 ft.

Del Bonita: Trans-Alberta Oils in conjunction with a group of lease-holding interests represented by H. M. B. Inglis is planning a test a little east of 1 Terminal Oils, which has a small production of light crude from the upper Madison.

Keho Lake: Keho Dome Oils is financing for a test in LSD 3, 18-11-22w4. Location is not far from Hudson's Bay Oil & Gas Co. 1, which got a small commercial production.

Vermilion Field

A recent survey of the Vermilion field, East Central Alberta, shows three wells in production and seven other potential producers. Battleview 2, LSD 13, 20-50-5w4, the crude discovery well, has been pumping about 40 bbl. a day since last May, from a sand around 1,849 ft. Western-Battleview 1, LSD 1, 30-50-5w4, finished at 1,859 ft., is on slow-stroke pump with capacity of 100 bbl., and selling part of its output to the North Star refinery at Winnipeg. Vermilalta-Frankview 2, LSD 4, 20-50-5w4, finished at 1,830 ft., is making close to 40 bbl. a day. Western Drilling 1 Richardson, LSD 14, 20-50-5w5, bottoming at 1,825 ft., is adjusting gravel pack to insure settled production. Acme 1, LSD 5, 20-50-5w5, at 1,834 ft., is ready for production but delayed by a fishing job. Acme 2, same section, is on top of the sand waiting to drill in. Franco-Hamers 1 and 2, LSD 16, 19-50-6w4, have got the sand and are shut down till spring. Conestoga 1, LSD 2, 30-50-5w4, got the sand around 1,850 ft., and is waiting for production test. Max 1, LSD 11, 20-50-5w4, is standing on top of the sand at 2,150 ft. Alberta Southern 1, LSD 13, 20-50-5w4, is standing at 500 ft.

Ontario Completions

Chatham Township: Union Gas 30, Lot 17, Concession 10, total depth 1,615 ft., 650,000 cu. ft. a day.

Orford Township: Union Gas 1, Lot 54, North Talbot Road, dry hole around 1,950 ft.

Oneida Township: Union Gas 254, Lot 11, West Plank Road,, 71,000 cu. ft. a day.

California Fields

(Continued from Page 66)

pleted in Bolsa zone. 13 days drilling time. Orange County.

Seal Beach Field

Heilman estate 6 fee 11-5s-12w
Flowed 1,080 bbl., 27.3-gravity, 3 per cent cut, 1,500,000 cu. ft. gas. 52/64-in. bean. Pressures 200/700 lb. Elev. 15 ft. T.D. 5,670 ft. 8⅝-in. water string 5,380 ft. 329 ft. 6⅝-in. liner 5,670 ft. Perf. 5,402-5,670 ft. 5,640 ft. 2½-in. tubing. 30 days drilling time. Completed in lower Wasem zone of Miocene age. Orange County.

Wilmington Field

Pet. Management Corp. 15 Harbor 29-4s-13w
Flowed 214 bbl., 15.4-gravity, 3.2 per cent cut. Elev. 11 ft. T.D. 3,712 ft. 8⅝-in. water string 3,042 ft. 691 ft. 7-in. liner 3,711 ft. Perf. 3,040-3,362 ft., 3,399-3,711 ft. 3,400 ft. 2½-in. tubing with packer at 2,703 ft. 15 days drilling time. Completed in Ranger zone. Los Angeles County.

Sound Pet. Co. 3 Harbor 2-5s-13w
Pumped 220 bbl., 16.5-gravity, 4 per cent cut. Elev. 9 ft. T.D. 3,078 ft. 8⅝-in. water string 2,685 ft. 403 ft. 5½-in. liner 3,070 ft. Perf. 2,686-3,070 ft. 2,710 ft. 2½-in. tubing. Completed in Ranger zone. 10 days drilling time.

Union Pacific R. R. 31 fee 34-4s-13w
Pumped 125 bbl., 20.9-gravity, 0.2 per cent cut. Elev. 11 ft. T.D. 3,121 ft. 11¾-in. water string 2,668 ft. 2,552 ft. 3-in. tubing. 470 ft. of 8⅝-in. liner perf. 2,668-2,769 ft., 2,787-2,945 ft., 3,005-3,111 ft., and 523 ft. of 4¾-in. liner 3,108 ft. and gravel-packed 60-mesh perf. at 2,585-88 ft., 2,606-43 ft., 2,662-3,108 ft. Deepened from 3,111 to 3,121 ft. Completed in Ranger zone. Los Angeles County.

Union Pacific R. R. 155 fee 3-5s-13w
Flowed 715 bbl., 25.3-gravity, 5 per cent cut. Elev. 15 ft. T.D. 3,405 ft. 10¾-in. water string 2,531 ft. 609 ft. blank 7-in. liner 2,987 ft. and 521 ft. 4-in. liner 3,405 ft. 60-mesh perf. 2,886-88 ft., 2,907-64 ft., 2,984-3,405 ft. 2,877 ft. 2½-in. tubing. Ranger zone blanked off. Production from upper Terminal zone of Miocene age. 35 days drilling time.

Union Pacific R. R. 164 fee 34-4s-13w
Flowed 50 bbl., 25.9-gravity, 10 per cent cut, 250,000 cu. ft. gas. 60/64-in. bean. Pressures 1,040/150 lb. Elev. 15 ft. T.D. 5,505 ft. P.B. 5,345 ft. 10¾-in. water string 2,659 ft. 4,975 ft. 2½-in. tubing with lead packer on bottom. Finished with combination 7-in. and 4¾-in. liners. 2,474 ft. of 7-in. liner 4,987 ft. Perf. 3,745-3,800 ft., 3,815-55 ft. 540 ft. of 4¾-in. liner 5,499 ft. with 60-mesh perf. at 5,225-5,343 ft., 5,467-5,499 ft. 66 days drilling time. Production coming from Ford zone.

Union Pacific R. R. 167 fee 3-5s-13w
Flowed 1,227 bbl., 22.9-gravity, 0.1 per cent cut. 58/64-in. bean. Pressures 100/430 lb. Elev. 14 ft. T.D. 2,911 ft. 7-in. water string 2,667 ft. 344 ft. gravel-packed 4-in. liner 2,911 ft. Perf. 2,568-70 ft., 2,590-2,647 ft., 2,667-2,911 ft. 2,560 ft. 2½-in. tubing. Completed in Ranger zone. 16 days drilling time. Los Angeles County.

LOS ANGELES BASIN OUTPOSTS OR DEEP TESTS

Dominguez Field

Union 79 Callender 32-3s-13w
Drilling at 12,280 ft. Los Angeles County.

Inglewood Field

Standard 3-1 L.A.I. 17-2s-14w
T.D. 9,030 ft. Hard Miocene sandy shale with streaks of tight oil sand. Los Angeles County.

R. R. Bush Oil Co. 1 Smith 8-2s-14w
T.D. 7,996 ft. Landed 7-in. casing for test of showings. Very gassy sand found on drilling break at 7,950 ft. Top Nodular shale 7,865 ft.

R. R. Bush Oil Co. 1 Merchants 8-2s-14w
Location. Los Angeles County.

Long Beach Field

Union 19 L.B.C. 30-4s-12w
T.D. 10,894 ft. Plugged back with 70 sacks cement. Completing. Los Angeles County.

LOS ANGELES BASIN WILDCATS

Dominguez-Gardena District

Wood-Mellon 1 Wood 31-3s-13w
T.D. 7,795 ft. P.B. 2,400 ft. Redrilled 6,975 ft. Pumped water with trace of oil. May deepen; awaiting results of drilling operations on 79 Callender of Union Oil Co., a deep test in Dominguez field. Los Angeles County.

COASTAL DISTRICT

Barnsdall Oil Co. was the successful bidder on the 2,400-acre Los Angeles County jail farm property in the Newhall-Castaic region and the lease on the property is being prepared and will be signed by the Los Angeles County Board of Supervisors. Barnsdall outbid two other companies, Gilmore Oil Co. and Texas Co., and obligated itself to start immediate work. Barnsdall Oil Co. posted a $12,000 certified check and agreed to pay the county a cash bonus of $50,000 and a royalty of 25 per cent of all oil and gas produced. This covers 1,200 acres but provides an option on an additional 1,200 acres. If production is developed on the first 1,200 acres and Barnsdall desires to exercise its option it agrees to pay the county a cash bonus of $500,000 and a royalty of 25 per cent. In addition to the $50,000 cash bonus paid for the first parcel Barnsdall will pay the county an additional $250,000 out of 5 per cent of oil production. This is the highest price ever paid for wildcat property in Los Angeles Basin.

COASTAL DISTRICT COMPLETIONS

Newhall-Potrero Field

Barnsdall 16 R.S.F. 27-4n-17w
Flowed 1,740 bbl., 34.1-gravity, 1.5 per cent cut, 1,612,000 cu. ft. gas. 30/64-in. bean. Pressures 565/400 lb. 1,118 ft. T.D. 7,102 ft. 8⅝-in. water string 6,122 ft. 1,006 ft. 5½-in. liner 7,100 ft. Perf. 6,140-6,402 ft., 6,772-7,100 ft. 7,021 ft. 2½-in. tubing. Completed in Modelo formation of upper Miocene age. 60 days drilling time. Los Angeles County.

Santa Maria Valley Field

Union 6 Vincent 25-10n-34w
Flowed 1,450 bbl., 16.5-gravity, 3 per cent cut, 1-in. bean. Pressures 100/300 lb. Elev. 294 ft. T.D. 4,375 ft. 7-in. water string 3,187 ft. 1,209 ft. 5½-in. liner 4,373 ft. Perf. 3,186-4,373 ft. 3,152 ft. 3-in. tubing. Finished in 20 days total elapsed time from spud to completion in Monterey zone of Miocene age. Santa Barbara County.

Ventura Avenue Field

Lloyd Corp. 6 Lloyd 23-3n-23w
Flowed 1,050 bbl., 32.1-gravity, 10 per cent cut, 750,000 cu. ft. gas. 20/64-in. bean. Pressures 250/1,600 lb. Elev. 360 ft. T.D. 10,111 ft. 7-in. water string 9,572 ft. The 10 per cent cut is salt water and well is on probationary production test. May re-enter hole for remedial work. Completed in Lloyd zone in extreme eastern end of structure. Ventura County.

Shell 130 Taylor 29-3n-23w
Flowed 2,655 bbl., 31.1-gravity, 1.3 per cent cut, 6,040,000 cu. ft. gas. 128/64-in. bean. Pressures 250/1,610 lb. Elev. 395 ft. T.D. 7,640 ft. 7-in. water string 6,240 ft. 1,411 ft. 5-in. liner 7,590 ft. Perf. 6,247-6,548 ft., 6,562-83 ft., 6,713-7,136 ft. 7,166-96 ft., 7,227-7,409 ft., 7,439-7,590 ft. 7,445 ft. 2½-in. tubing. 33 days drilling time. Completed in 57 zone. Ventura County.

Two Wildcats Starting in Crow District of Wood County

By R. MARNE SANFORD

DALLAS, Tex., Feb. 3.—With all indications pointing to the busiest year of wildcatting in the recent history of eastern Texas, a new area in Wood County was the focus of attention at the close of the week. It is the Crow area about 7 miles west of Hawkins where two new wildcat tests were staked the past week.

For several years a prospective oil area and the site of much leasing and blocking, actual drilling was in sight for the Crow area as one test was staked in the townsite of Crow and another about 2 miles to the northeast. The townsite test is to be F. R. Jackson and W. C. McGlothlin 1 S. O. Moore, on a 10-acre tract in the Joseph Knight Survey. It is a projected Woodbine sand test and will start immediately. Northeast of Crow and located 467 ft. from the south and 6,470 ft. from the east lines of a 920-acre tract in the William Clark Survey, Ryan Consolidated Petroleum Corp. completed arrangements with W. C. McGlothlin for its 1 J. E. Gaut. With the latter holding part of the acreage, it will be carried as the Ryan Consolidated and W. C. McGlothlin No. 1 test. Contract has been let and work is scheduled to start at once.

As a planned test in the Crow area, definite location not having yet been made, J. Z. Werby of Longview would drill 1 Ray W. Fortune, on a 42-acre tract ½ mile northeast of the town of Crow.

SUMMARY OF COMPLETIONS

East Central Texas

	No.	Bbl.	Footage
Oil wells: Wortham field	2	84	6,016
Other fields	1	1,448	2,827
Gas wells: Grapeland field	2	*230	11,955
Dry holes: Fields	3	.....	8,456
Wildcats	4	.....	18,717
Total	12	.....	47,971

*Million cu. ft.

East Texas Field
(hourly production)

Oil wells: Gregg County	9	466	32,224
Rusk County	2	98	7,295
Upshur County	3	212	10,994
Dry holes: Rusk County	1	.....	3,580
Total	15	.....	54,093

Other Planned Wildcats

In other counties of the district activity mounts as new exploratory holes were either started or tentatively staked in Smith, Van Zandt, Cherokee, Anderson and Houston counties.

In northern Smith County where one wildcat was recently started, Afton Thrash of Tyler is credited with plans for another wildcat in the Lynn Springs community which lies just south of the Hawkins district of southern Wood County. He has filed application for a permit to drill 1 Alberta Hackett on a 20-acre tract in the W. D. Meeks Survey. It will be a Woodbine sand operation.

Van Zandt County.—Extensive leasing and blocking is under way in Van Zandt County and one of the blocks is due to receive a Woodbine sand test. It is being taken by Ed Parsons of Athens and is located west of Ben Wheeler and totals some 2,000 acres at the present time. The tentative site for the test is on the M. R. Reynolds 120-acre tract in the J. Russell Survey.

Cherokee County.—Cherokee County was definitely given a new wildcat when R. Lytle and associates staked 1 W. D. Thomas in the B. C. Lewis Survey and located in the southeast 40 acres of a 108-acre tract. It is about 1 mile northeast of Cuney and pits are being dug for immediate drilling. Donald Marr of Corsicana assembled the drilling block and turned the major portion to Lytle for the test.

Anderson County.—Anderson County's Elkhart area was given a new operation during the week and to further the county's activities, two new permits have been filed for test in the Frankston area where a wildcat has been creating considerable interest for several weeks. The Elkhart area test is the Elbert Williams, Dallas, and Griffith Brothers, Fort Worth, 1 Anderson-Clayton Cotton Co., on a 57-acre tract in the William Frost Survey, about a mile northwest of the town of Elkhart. The operators have a 2,500-acre block out of which several spreads have been taken by major companies. The block is only a few miles northeast of the Hemby gas and distillate area and is about 7 miles south of the Long Lake field.

At Frankston in Anderson County drilling applications have been filed by Horace Nelms, Tyler, for two tests. One is for 1 Lizzie McGee, 150 ft. from the south and midway between the east and west lines of a 1-acre tract in the Ferguson Survey. The other test will be 1 B. H. Bizzell, on a 10-acre lease in Block 3, Ferguson Survey. Meanwhile the R. H. & W. Oil 1 Saunders, Ferguson Survey, in the townsite of Frankston in Anderson County, is delayed by a fishing job at 5,220 ft. Top of the Woodbine has been reported at 5,135 ft. with unconfirmed reports that it carried water.

Houston County.—Houston County was given a new 3,000-ft. Carrizo and Wilcox formation test on a 1,000-acre block 9 miles southwest of Crockett. It will be drilled by James E. Smith, Houston, on a block acquired from W. E. Elkins and trustees of the Houston County Coal Co. Nearest production is in the Kittrell field 9 miles southwest. The acreage acquired by Smith is in the Banks, Ellis, Goolsby and Jacques surveys.

EAST TEXAS FIELD COMPLETIONS

Gregg County

Longview area: Bailey & Trimble 13 Jones, 63 bbl. an hr., 3,580-3,648 ft.
Bailey & Trimble 15 Jones, 63 bbl. an hr., 3,571-3,670 ft.
Hamil & Smith 7 Everett Est., 100 bbl. in 2 hr., 3,480-3,525 ft.
McElvain 7 J. A. Whittaker, 60 bbl. an hr., 3,503-35 ft.
Kilgore area: Delta Drlg. 9 L. D. Crim, 250 bbl. daily, pumping 3,524-3,610 ft.
S. S. Laird 4 Muckleroy, 30 bbl. in 30 min., 3,560-76 ft.
J. F. Merrick 4 S. S. Laird, 20 bbl. in 20 min., 3,556-79 ft.
Refugio Oil 7 Hughey, 30 bbl. in 30 min., 3,459-84 ft.
T. B. Wrather 8 Hughey, 120 bbl. in 6 hr., 3,545-97 ft.

Rusk County

Joiner area: British American 15 Stone, 22 bbl. in 15 min., 3,605-39 ft.
P. G. Lake, Inc. 10 Dickerson, 10 bbl., pumping, an hr., 3,592-3,601 ft.
Roosth & Genecov (was O. R. Cocker) 1 (was 2) E. E. Morse, junked, 3,580 ft.

Upshur County

Longview area: R. Lacey 22 Victory, 35 bbl. in 30 min., 3,692-94 ft.
R. Lacey 25 Victory, 41 bbl. in 30 min., 3,642-46 ft.
B. F. Phillips 3 Corbin, 40 bbl. in 30 min., 3,590-3,654 ft.

EAST CENTRAL TEXAS COMPLETIONS

Falls County

Lott field: A. H. Bell 3 C. L. Trice, top Austin chalk 787 ft., Buda 1,190 ft., Del Rio 1,224 ft., Georgetown lime 1,289 ft., Edwards lime 1,460 ft., Glen Rose 1,880 ft., Pettit 2,757 ft., Travis Peak 2,858 ft., dry at 3,101 ft.

Fannin County

Wildcat: Damon 1 Chaffin, J. Deutchum Sur., 4 mi. NE Bonham, abandoned location.

Freestone County

Wortham field: McNeil Pet. 1 Chancellor, 67 bbl. oil with 96 per cent salt water, 2,934-96 ft.
McNeil Pet. 1 Wilson, 17 bbl. oil, with 96 per cent salt water, 3,014-20 ft.

Houston County

Grapeland gas field: Grier Bros. & Jackson 1 Guise, 115,000,000 cu. ft. gas daily with 40 bbl. distillate per 1,000,000 cu. ft., 5,926-53 ft.
Grapeland Oil 1 Howard, 115,000,000 cu. ft. gas, with 35 bbl. distillate per 1,000,000 cu. ft., 5,988-6,022 ft.

Limestone County

Wildcat: Hardin & Ames 1 Hammond, J. Folk Sur., 1½ mi. NW Kosse, top Austin chalk 2,689-2,948 ft., Woodbine 3,178 ft., Buda 3,338 ft., Del Rio 3,424 ft., Georgetown lime 3,493 ft., Paluxy 4,248 ft., Glen Rose 4,293 ft., anhydrite 5,185 ft., base anhydrite 5,198 ft., Pettit 5,690 ft., Travis Peak 5,828 ft., dry at 5,955 ft.

Navarro County

Wortham field: J. B. Daniels 1 Kleinschmidt, dry at 3,200 ft.
Powell field: Guy Sitton 1 Cerf, dry at 2,155 ft.

Rains County

Wildcat: Plains Prod. 1 W. D. Foster, T. Cummings Sur., top Midway 593-633 ft., Navarro 1,290 ft., Nacatoch 1,615 ft., Taylor 1,934 ft., Pecan Gap 2,480 ft., Austin chalk 3,800-4,145 ft., Woodbine 4,670 ft., dry at 4,752 ft.

Red River County

Wildcat: J. F. Morrisey 1 A. F. Tyre, J. R. Maro Sur., 3 mi. E Bogato, top Blossom sand 1,100-18 ft., sub-Clarksville 1,594 ft., Woodbine 1,960 ft., Dexter 2,334 ft., Georgetown lime 2,392 ft., dry at 2,910 ft.

Van Zandt County

Van field: P. Calvert 1 Carter, 181 bbl. in 3 hr., 2,804-27 ft.

Wood County

Wildcat: W. J. Johnson 1 Green, J. P. Moseley Sur., 2½ mi. NE Hawkins, top Austin chalk 4,458 ft., Woodbine 4,575 ft., dry at 5,100 ft.

EASTERN TEXAS WILDCAT REPORT

Anderson County

R. H. & W. Oil 1 Saunders, 17-acre tract in Joseph Ferguson Sur., in Frankston townsite, top Austin chalk 4,605-4,834 ft., sub-Clarksville 4,878-4,910 ft., fishing drill pipe, T.D. 5,225 ft.
Texas 1 Greenwood, M. Salisar Sur., 4 mi. NW Palestine, T.D. 2,100 ft., hole 6 ft. off vertical, P.B. 1,450 ft., prepare to drill.

Cherokee County

R. Lytle 1 W. D. Thomas, B. C. Lewis Sur., 108-acre tract, 1 mi. NE Cuney, pits.

Freestone County

C. W. Killough and E. B. Germany 1 Woolens, J. Ryan Sur., 9 mi. N Fairfield, top Austin chalk 2,401-2,575 ft., drilling 3,140 ft.

Kaufman County

T. G. Shaw, trustee, 1 Agnes Wynne, B. S. Newman Sur., 8 mi. E of Kaufman, lower Trinity test, S.D. for high water 6,454 ft.

McLennan County

E. P. Campbell 1 Stewart, S. Burton Sur., 5 mi. N of Waco, S.D. 765 ft.
Frank Place 1 Hackney, I. Robbins Sur., 4 mi. SE McGregor, S.D. 650 ft.

Limestone County

Farrell Drlg. and Gulf Oil 1 F. Bevill, J. H. Murray Sur., 1 mi. SW of Horn, Travis Peak 4,892 ft., T.D. 5,520 ft., P.B. 4,930 ft., drilled out to 4,942 ft., tested water, prepare to P.B. and test Pettit from 4,755-4,865 ft.

Navarro County

Hargrave Oil 1 C. S. West, M. Boren Sur., 1½ mi. S Richland, T.D. 3,257 ft., salt water.

Rusk County

Delta Drilling Co. 1 Kangerga, 113-acre tract in R. Lane Sur., 3 mi. N of Henderson, 8,200-ft. test, preparing to spud.
Skelly Oil 1 Markey, Nolan Sur., 4 mi. SW Mount Enterprise, 8,000-ft. test, building derrick.

Smith County

O. L. Ross 1 Dr. Willingham, J. Herrin Sur., 2 mi. E Whitehouse, 10-in. at 110 ft., prepare to drill head.
Sells Pet. 1 C. J. McKay, Nathaniel Wren Sur., 3 mi. NW Winona, Woodbine sand test, rigging up.
Flanagan & Nicholson 1 P. Hale, Isaac Brock Sur., in Red Springs area, Woodbine test, 9-in. 1,141 ft., drilling 2,500 ft.

Trinity County

R. W. Burnett 1 Southern Pine Lumber Co., G. Ricardo Sur., 2 mi. N Apple Springs, moving in material.

Upshur County

Sun Oil 1 W. C. Henderson, NW cor. of 27-acre tract in 100-acre tract in Robertson Asher Sur., just outside town of Ore City, 7,000-ft. test, rigging up.

Wood County

Delta Drlg. Co. and Sells Pet. 1 Beckham, G. W. Cowan Sur., 4½ mi. NE of Mineola, drilling 5,432 ft.
Travis & Stoddard 1 Bryan, C. M. Patton Sur., 1½ mi. W Hawkins, 467 ft. from N and E lines of survey, location.
W. L. Goldston 1 Osborne, H. S. Cobb Sur., 1 mi. SE Hawkins, 330 ft. from N and E lines of survey, abandoned hole, skidded derrick, drilling 2,410 ft.
Bill Urbanic 1 J. A. Snider, NE cor. 73-acre tract in Castleberry Sur., 1½ mi. NE of Hawkins, rigging up.
A. A. Folsom 1 E. P. Prince, E. Wideman Sur., 1½ mi. NW Hawkins, drilling 910 ft.

Louisiana Gulf Coast

(Continued from Page 70)

T.D. 11,488 ft., plugged back 9,325 ft., prepare to test.

St. Bernard Parish

California Co. and Tide Water 1 Biloxi Marsh Lands Co., 25-12s-16e, T.D. 7,959 ft., 9⅝-in. casing 7,954 ft., drilling plug.

St. Martin Parish

Superior 1-B St. Martin Land Co., Sec. 28 Dome, 20-9s-7e, T.D. 9,186 ft., losing returns.

St. Mary Parish

Humble 1 Miami Corp., 15-15s-6e, T.D. 3,542 ft., 13⅜-in. casing 3,540 ft., drilling plug.

Revived Walker-Tallmadge Field Has Five Completions

By OTTO C. PRESSPRICH

SAGINAW, Mich., Feb. 3.—Development in Ottawa County paced Michigan oil-field activities last week, five producer completions being recorded, although none approached the productivity of the recent Tallmadge gusher. Indicated was extension of the southeast extension of the Georgetown Township producing area as one test was completed for 25 bbl. a day and Bell-Marks, Inc., 1 Tunis, southeast offset to Fisher-McCall 1 Wells, had several hundred feet of oil showing naturally.

Eleven of the week's 18 completions in Michigan were producers, one being a natural-gas well, best yet in the Wise field of Isabella County, to be tied in soon with a pipe-line network serving Saginaw Valley cities.

Sun Oil Co. had drilled to a record depth for Clare County activity with its 1 McIntosh in Section 16 of Hamilton Township reported down almost to 5,000 ft.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Allegan County	1	100	1,339
Bay County	1	168	2,891
Clare County	1	160	3,921
Kent County	2	210	3,721
Ottawa County	5	193	9,147
Gas wells: Isabella County	1	*5.45	1,254
Dry holes: Allegan County	2	.....	3,186
Van Buren County	2	.....	2,591
Others	3	.....	8,158
Total	18	.....	36,208

*Million cu. ft.

Slight showings of oil were found at 4,804 and 4,811 ft.

In Bay County acidizing helped Chapman Oil Co. 1 Rechstiener, in Section 3 of Monitor Township, in a completion giving the field a mile westerly extension. Efforts continued to salvage hole of Gulf 1 Bateson, Michigan's deepest hole. Drillers have been unable to lift the pipe.

Total daily initial production of the week's nine oil wells was just under 940 bbl. One was in Allegan County, scene of two dry holes. Both Van Buren County completions also were dry as were tests in Cass. Berrien and Montcalm counties.

The state Conservation Department approved 16 drilling permits during the week, bringing the total for the month to 66. Leading was Allegan County with six, followed by Clare and Van Buren with three each, Arenac with two, Midland and Ottawa with one each.

MICHIGAN COMPLETIONS

Allegan County

Monterey Township: Daily Crude Oil Co. 1 Duryee, SW NW NW 24-3n-13w, dry, T.D. 1,840 ft.
Trowbridge Township: Miller Brothers 1 Foster, NE NE SW 16-1n-13w, dry, T.D. 1,346 ft.
E. H. Herz 1 Shafer, NW NE SW 29-1n-13w, 100 bbl., acid, T.D. 1,339 ft.

Bay County

Monitor Township: Chapman Oil Co. 1 Rechstiener, S½ N½ NE 3-14n-4e, 168 bbl., acid, T.D. 2,891 ft.

Berrien County

Watervliet Township: J. Warman 1 Warman, SW SW NE 34-3s-17w, dry, T.D. 2,512 ft.

Cass County

Ontwa Township: R. B. Tamblyn Development Co. 1 Good, S½ SE SW 15-8s-15w, dry, T.D. 2,312 ft.

Clare County

Redding Township: Freeman Oil Co. 1 Bicknell, S½ NE NE 34-19n-6w, 160 bbl., pinched, T.D. 3,921 ft.

Isabella County

Wise Township: W. E. Ross 1 Drake, E½ NE 20-16n-3w, 5,450,000 cu. ft. gas, T.D. 1,254 ft.

Montcalm County

Douglass Township: Columbia Oil & Gas Co. 1 Olson, NW NW SE 27-11n-7w, dry, T.D. 3,314 ft.

Kent County

Walker Township: Voorhees Drilling Co. 1 McKay, SW NW SW 19-7n-12w, 200 bbl., acid, T.D. 1,914 ft.
Michigan Devonian Petroleum Co. 1 Conrad, SE NE SW 33-7n-12w, 10 bbl., acid, T.D. 1,807 ft.

Ottawa County

Georgetown Township: Fisher-McCall Oil & Gas Co. 2 Moss, NW NW NE 2-6n-13w, 25 bbl., acid, T.D. 1,779 ft.
Tallmadge Township: Fisher-McCall Oil & Gas Co. 1 Wells, NE SE SW 1-6n-13w, 75 bbl., acid, T.D. 1,888 ft.
Smith Petroleum Co. 3 Visser, NE SE NE 33-7n-13w, 8 bbl., acid, T.D. 1,839 ft.
Smith Petroleum Co. 1 Fenske, SW SE NW 34-7n-13w, 75 bbl., acid, T.D. 1,847 ft.
Smith Petroleum Co. 6 Visser, NW NW NW 34-7n-13w, 10 bbl., acid, T.D. 1,794 ft.

Van Buren County

Bloomingdale Township: Clapsaddle & Harris 1 Bair, NW SE NE 9-1s-14w, dry, T.D. 1,270 ft.
Fortney Oil Co. 1 Stiles, NW NE NE 27-1s-14w, dry, T.D. 1,321 ft.

Oklahoma Fields

(Continued from Page 64)

Hunton 4,064 ft., 5-in. 4,064 ft., T.D. 4,084 ft., bailed water, S.D.
Burke-Greis 1 Mullins ..... SW SE SE 5-10-10
12-in. lowered to 569 ft., 10-in. 1,227 ft., sand 1,909-25 ft. show gas, sand 2,013-75 ft., gas, drilling 2,265 ft.
Carte 1 Bucco ..... NE NE SE 20-10-12
Drilling 2,160 ft.
Vierson & Phillips 1 Leonard .... SW SE NW 11-13-7
S.D. 3,594 ft.

Pontotoc County

Alma 1 Norris ..... NE NW SW 22-4-4
10-in. 61 ft., Hunton 1,470 ft., Viola 1,500 ft., dense 1,570 ft., dolomite 1,580 ft., Wilcox 1,729 ft., drilling 2,080 ft. sandy dolomite.
Tom Palmer 1-A Ramsey ..... SE SE NE 31-5-8w
Drilling 5,675 ft.

Pottawatomie County

Grisso & Eason 1 Rayster ..... SW NW NW 33-6-3
12-in. 72 ft., drilling 2,345 ft.
O'Correr & Townsend 2 Lynn .... NE NE NW 28-6-4
10-in. 110 ft., rotary rig.
Kerlyn 1 Cherry ..... SE NE NW 32-8-5
T.D. 4,330 ft., 2,300 ft. oil in hole, did not acidize, will put on pump.

Seminole County

Delaney & Atlantic 1 Clark ..... NE NE SE 30-8-7
Swab 49 bbl. in 24 hr., testing, flowed 364 bbl. in 24 hr., through 2½-in. open tubing, gaged 1,600,000 cu. ft. gas, 40-gravity oil.
Paul J. McIntyre et al 1 Brown .... SW SE NE 14-9-7
Location.
Weldon Hall 1-A Jackson (twin well) N½ NE SE 14-7-7
Standard tools 3,181 ft., drilled plug, oil rose 2,500 ft., bailed dry; deepened to 3,186 ft., 1,000 ft. oil in hole; 3,189 ft., 1,500 ft. oil in hole; shot 40 qt. 3,168-92 ft., deepened to 3,192 ft. T.D., testing.

Stephens County

Gulf 1 Krieger ..... E½ NE SW 3-2-5w
Hoxbar 2,900 ft., drilling 4,614 ft. shale.

Tillman County

Stovall Drilling 1-A Howell ..... NW SE SE 13-1-17w
S.D. 150 ft.

Tulsa County

W. F. Eppler 1-A McBirney ..... SW SW 12-18-13
Sand 1,098-1,120 ft., no show, drilling 1,250 ft.

Woods County

Gulf 1 Hess ..... NE NW 33-23-13w
Cored 8,306-09 ft., hard white sand; cored 8,341-43 ft., hard white sand; drilling 8,348 ft. hard sand.

Southwest Texas Fields

(Continued from Page 67)

Jim Wells County

Alice field: H. H. Howell 1 Cummings, 25 bbl., perf. casing 5,135-38 ft., T.D. 5,397 ft.
Ben Bolt field: Bridwell 8 Beasley, 335 bbl., ⅛-in. choke, perf. casing 5,202-08 ft., T.D. 5,216 ft.

Nueces County

Clara Driscoll field: Texas Conservative Oil Co. 10-B Flynn, 107 bbl., 11/64-in. choke, perf. casing 5,827-31 ft., T.D. 5,974 ft.
Richard King field: Southern Minerals 17 King, 81 bbl., 7/64-in. choke, T.D. 5,620 ft.
Southern Minerals Corp. 3 Walker, 97 bbl., 5/32-in. choke, perf. casing 5,637-41 ft., T.D. 5,651 ft.
Stratton field: Bay Tex Oil Corp. 9 Union Central Life Insurance Co., 176 bbl., ⅛-in. choke, perf. casing 6,485-95 ft., T.D. 6,610 ft.
Corpus Christi 13 Wardner, 127 bbl., ⅛-in. choke, perf. casing 6,390-98 ft., T.D. 6,600 ft.

Refugio County

Tomoconnor field: Quintana 45 Heard, 737 bbl., ¼-in. choke, perf. casing 5,894-5,900 ft., T.D. 5,925 ft.

Victoria County

Heyser field: Gulf 48-B Traylor, 137 bbl., ⅛-in. choke, sand 5,484-94 ft., T.D.
Telferner field: Sunray Oil Co. 4 Strake, dry, T.D. 2,739 ft.

LAREDO DISTRICT

Duval County

Bridwell field: Bridwell 2-D Rogers, dry, T.D. 4,500 ft.
Cedro Hill field: Humble 19-F Duval County ranch, 71 bbl., pumping, T.D. 1,450 ft.
Driscoll field: Continental 61-A Driscoll, 129 bbl., ¼-in. choke, perf. casing 3,363-67 ft., T.D. 3,369 ft.

Hidalgo County

Samfordyce field: H. J. Porter 3 Flores, 110 bbl., ⅛-in. choke, perf. casing 4,113-19 ft., T.D. 4,154 ft.

Jim Hogg County

Colorado field: Humble 7-B King, 176 bbl., ⅛-in. choke, T.D. 3,019 ft.
V. F. Neuhaus 2-D Trevino, gas well, T.D. 2,955 ft.
Manila field: Appell & Robertson 1 Zachry, gas well, sand 2,581-91 ft., T.D.
Bridwell 1 Zachry, 59 bbl., pumping, sand 2,588-90 ft., T.D.

McMullen County

Wildcat: Cities Service 3-B Lowe, dry, T.D. 1,678 ft.
Magnolia 1 Rhodes, dry, T.D. 3,219 ft.

Starr County

North Rincon field: Sun 1 Coates, 233 bbl., ¼-in. choke, perf. casing 4,381-84 ft., T.D. 5,313 ft.

Webb County

Killam field: O. W. Killam 2 Villareal, dry, T.D. 2,058 ft.
Wildcat: Seaboard 3 Newton, dry, T.D. 1,810 ft.

Zapata County

Escobas field: Dulup 4-C Garcia, dry, T.D. 2,140 ft.

SAN ANTONIO DISTRICT

Bexar County

Gas Ridge field: Southwest Drilling Co. 9 Covell, 2 bbl., pumping, T.D. 434 ft.

Caldwell County

Bee Creek field: Ralph Ogden 8-A Miears, 600 bbl., open tubing, T.D. 2,131 ft.

Frio County

Pearsall field: Texas Atlas Petroleum Corp. 7 Cory & McWilliams, 72 bbl., 2 hr., open 2-in. tubing, T.D. 5,600 ft.

Medina County

Wildcat: C. Carter 2 Chandler, dry, T.D. 1,110 ft.

Kansas Fields

(Continued from Page 60)

3,210-20 ft., 1 bbl. oil an hr., underreaming 7-in.

Cowley County

Sinclair Prairie 1 Gibson ..... SE SE NW 29-34-3e
8-in. 2,650 ft., fishing 2,656 ft.

Ellsworth County

Pryor & Lockhart 1 Weisenthal ..... SW SE NE 30-15-10w
Drilling 1,050 ft.

Greenwood County

Ward McGinnis 1 Sharp ..... SW SW 9-28-12e
S.D. 1,938 ft.

Graham County

Shields 1 Paxson ..... NE NE NE 11-8-24w
T.D. 4,092 ft., perf. 3,750-56 ft., pumped 8 bbl. per hr. for 8 hr.
Ewers-Simpson et al 1 Bundy ..... SW SW 12-9-22w
Drilling 3,485 ft.

Leavenworth County

McLaughlin 1 Thorp ..... NE NE 27-10-20e
5-in. 2,109 ft.

Reno County

R. E. Hess 1 McKee ..... E½ NE SE 8-22-8w
Drilling 1,580 ft.
Bay Petroleum 1 Woodson ..... E½ NE NW 28-26-9w
First report.

Rice County

Hinkle 1 Kitchen ..... W½ NW NE 11-18-9w
10-in. 113 ft., anhydrite 417 ft., drilling 1,524 ft.
Bradley Oil 1 Roelf ..... N½ NW NW 23-18-10w
8-in. 232 ft., anhydrite 442 ft., drilling 1,425 ft.
Bunting, Dowling & Skow 1 Mantz W½ SW NE 17-19-10w
Anhydrite 535 ft., Topeka 2,610 ft., Lansing 2,938 ft., Sooy 3,308 ft., Arbuckle 3,322 ft., 5-in. 3,323 ft., standard tools 3,325 ft.
Sharon Drlg. et al 1 Nevious ... SW SW NE 21-19-10w
First report.
A. D. Cochran et al 1 Miller ..... N½ NW NW 31-20-9w
First report.

Russell County

Earl Wakefield 1 Holland ..... E½ NE SE 30-13-13w
10-in. 812 ft., drilling 1,670 ft.
Shell 1 Ruby ..... NW NW NE 36-14-13w
First report.

Stafford County

Wakefield & Atlantic 1 Prescott W½ NW SW 32-23-14w
Anhydrite 893 ft., Florence 2,200 ft., drilling 2,555 ft.
Fain Drilling 1 Thole ..... E½ SE SE 23-21-12w
Lansing 3,240 ft., base Kansas City 3,495 ft., cherty conglomerate 3,520 ft., Simpson shale 3,551 ft., Arbuckle 3,595 ft., cored 3,598-3,601 ft., good porosity and saturated.

Sumner County

Benedum-Trees 1 Landwehr ..... E½ SE SE 17-32-1e
12-in. 132 ft., drilling 1,605 ft.

FOREST CITY BASIN

ST. JOSEPH, Mo., Feb. 3.—Oil men were puzzling this week over a statement made publicly by Ray Smith, production superintendent for the Ohio Oil Co.

that "a year from today" oil wells in Richardson County, Nebraska, will not be producing enough to be profitable.

The statement was made during a visit to the Falls City pool by the Nebraska Unicameral State Legislature which had been invited to make the trip from Lincoln to see for itself what sort of problems beset an oil man. Earlier it had been hinted that the legislature was planning new taxes to cover the oil-production industry.

Mr. Smith's pessimistic remarks about production from the new pool were seconded by Harry Harper, pioneer drilling contractor in the area. Ohio entered the Falls City play only 3 months ago when it bought the holdings of the Pawnee Royalty Co.

It was stated that pressure, originally 955 lb., had diminished to around 746 lb. in the south part of the field and that the fluid level had dropped 139 ft. Ten-acre spacing in a region where pay zones are comparatively shallow is causing some operators to fear they will come out in the red. Talk of unitizing now is being heard.

In fact, Ohio, Skelly and Harry Harper are expected to follow a unit plan when they next drill in the north part of the pool.

At its 6 Sandrock, Ohio Oil Co. went into the Hunton lime pay only 12 ft. Others who have gone much deeper have water on their hands. It is reliably stated that only two wells in the whole Falls City pool now are producing oil alone.

The 6 Sandrock, SW NW NE 20-1n-16e, Richardson County, topped Hunton at 2,248 ft. and was bottomed at 2,260 ft. Elevation is 895 ft. In a 60-minute swabbing test the well produced 70 bbl. of oil. Some officials believed it would pump upwards of 100 bbl. per hour. No. 7 Sandrock in NW NE SW 20-1n-6e was started and is drilling below 1,000 ft.

Attempts to make a Viola test at the McNulty-Bass 1 Cander, 2 miles south of Humbolt in C SW SW 15-2n-13e, Richardson County, were unsuccessful when both casing and drill stem were lost in the hole. The drill pipe was shot off at 2,088 ft. and pipe was to be lowered again to 1,910 ft. for a Hunton test. It is believed the test has a crooked hole.

A new test was spudded this week in Furnas County, 4 miles north of the Kansas State line and 10 miles southwest of Beaver City, Neb., by Helmerich & Payne, Inc., and Barnsdall Oil Co.

The new wildcat is 1 Charles E. Erickson, SW SW 8-1n-23w. Surface pipe will be set at around 200 ft., and a rotary rig moved in to finish the hole to a contract depth of 3,500 ft. or to the Arbuckle dolomite. During recent weeks the entire south half of Furnas County has been active with core drillers and 35 test holes were cored in the block assembled for the operators covering the Wyatt ranch.

Meanwhile, the Atkins & Trickett test 9 miles southeast of Beaver City, remained shut down. The nearest production is the Ray pool in Phillips County, Kansas, 38 miles to the southeast.

On the Missouri side of the basin Jackson & Rust started up again at 1 Hays near Watson. Backers of the old Brin & Nathan test in Holt County, east of Mound City in C NW NW 1-61n-38w, said Garetson & Knisely of Douglas, Wyo., would move in soon with a light rotary and complete their hole. The test was left incomplete at 2,310 ft.

FOREST CITY BASIN DRILLING REPORT
NEBRASKA

Otoe County

August Krueger 1 Roe .....NE SE SW 5-7n-7e
Drilling 1,530 ft.

Richardson County

Ohio 7 Sandrock .....NW NE SW 20-1n-16e
Drilling below 1,000 ft.
McNulty & Bass 1 Cander....SW NW SW 15-2n-13e
Hunton 1,789 ft., Maquoketa shale 2,040 ft., Viola 2,454 ft., drilling 2,479 ft.
Palensky et al 1 Kalous.....SW SW 5-2n-13e
T.D. 1,591 ft., 5-in. 1,574 ft., standard tools.
I. T. I. O. 1 Schaible.....C SW SW 29-3n-16e
Surface pipe set.
W. H. Martgan 1 Smith.....C NW NW 31-3n-16e
Hunton 2,513-39 ft., cemented pipe and S.D.
Garretson & Knisley 1 Bankers Life..SW SW 30-3n-16e
8⅝-in. 70 ft.
John Parson 1 Weeks .....SE SE SE 23-8n-11w
First report.

MISSOURI

Atchison County

Jackson & Rust 1 Hays.....C NE NE 22-66n-42w
Drilling below 600 ft.

Holt County

Kilby & Flory 1 Meyer.....SE NE NW 27-62n-39w
10-in. at 695 ft., fishing job at 732 ft.

IOWA

Fremont County

J. A. Johnson 1 Lucas.....SW NE SE 28-70n-43w
Shut down in base of Kinderhook at 1,097 ft.

Guthrie County

Fletcher Hunt 1 McConnell.....SE SE 11-78n-30w
Acidizing, gas showing at about 1,500 ft.

Taylor County

Smythe, McLaughlin & Comfort 1 Hook .....
NE NW 18-69n-35w
12½-in. 408 ft., to run 10-in. 685 ft.

MISSISSIPPI AND SOUTHEAST

Lack of Production Control Causes Storage Increase

By GEORGE WEBER

JACKSON, Miss., Feb. 3.—Runs of Tinsley crude to storage were increased during the past week by an average of about 2,000 bbl. daily. Unequal well production in the unprorated field has caused overproduction for many months, and the situation appears due for further aggravation from unrestricted flow from a few wells. Per well daily production varies at the present time from 75 to 400 bbl. Although Standard Oil Co. of Louisiana announced that effective February 1, per well purchases would be reduced from 75 to 65 bbl., the total field production trend is in the reverse direction.

Of a total daily average crude movement of 18,994 bbl. from the field, about 12.8 per cent moves to Vicksburg where it is refined for local markets, 3 per cent to refining at Baton Rouge, 6 per cent to an Illinois refinery, and the remainder to storage. Recently large volumes of stored Tinsley crude were sold for movement to the Texas Gulf Coast and the East Coast.

A new outlet for the crude may result from plans of the Mid-South Refining Co. which has announced arrangements for moving the former Hurricane Petroleum Co. plant from Overton, Tex., to Jackson, Miss., contingent on sales of $400,000 in stock certificates and donation of the refinery site by the city of Jackson.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells	2	758	9,692
Dry holes	1	.....	5,655
Total	3	.....	15,347

Leasing Gains

The increase in leasing in Mississippi continued a 3-week upward trend last week, with activity distributed throughout the state, as usual, but particularly in Leake, Jones and Lauderdale counties. Jefferson Davis, Stone, Jones, Jasper, Madison and Bolivar counties also figured in recent leasing. In Jasper County W. O. Allen has assembled a block and has staked a tentative location for a 7,000-ft. test in Township 1n-10e.

Wildcatting continued quiet, without new developments of importance. In Issequena County E. C. Johnston 1 Irby Charping, taken over from W. E. Hall recently and deepened below 5,021 ft., was abandoned at total depth of 5,655 ft. A drill-stem test several days ago at 5,000-23 ft. showed only mud and salt water, no show of gas or oil. The section tested had shown promising indications on an electrical log.

W. O. Allen 1 Culley, Glass dome test in Warren County, is being rigged up for another test of the Wilcox formation. The wildcat, drilled in early 1940, topped the Wilcox at 3,260 ft. and proved the salt dome. Since that time, the Wilcox has shown important new production in La Salle Parish, Louisiana, and operators plan to sidetrack above the formation and core it.

Tinsley Drilling

An expected southward extension of production in the Woodruff sand at Tinsley is indicated in Hassie Hunt 1 Stutts, which is believed to have a good Woodruff section. Locations staked and drilling in the immediate vicinity of the outpost confirm the probability of oil production on the south. There is much discussion of wildcatting south of Tinsley, but nothing definite has developed, and it is logical that development on the south end of the field will proceed as recently, with edge and nearby outpost drilling.

Another interesting development at Tinsley is the staking of Union Producing Co. 1-A Woodruff, 11-10-3, on the west edge of the field. The acreage in that area has been under litigation for many months, and although some of the thickest Woodruff sand in the field was encountered in wells in Section 11, westward exploration was halted by the necessity for clearing titles. Woodruff 1-A offsets Slick-Urschel 1 Slick, which logged 71 ft. of Woodruff sand, and is located northwest of Union 1 Herron, which had 102 ft. of Woodruff. Three locations to the south of the new location, however, Union 1 Ross, NW NW 14-10-3, found no Woodruff sand, so the western development will reveal interesting data on the thickness trend of the important sand section.

MISSISSIPPI COMPLETIONS

Wildcat—Issequena County

E. C. Johnston (former W. E. Hall) 1 Irby Charping, NE NW 29-10-8, T.D. 5,655 ft., dry.

Tinsley—Yazoo County

Union & Texas Co. 1-A Childress, NE SW 24-10-3, 338 bbl., 16/64-in. choke, T.P. and C.P. 125 lb., 7-in. casing 4,641 ft., T.D. 4,687 ft., Woodruff sand 4,646-78 ft.
Union 1 Childress-Jones unit, SW SE 24-10-3, 420 bbl., 16/64-in. choke, C.P. 190 lb., T.P. 125 lb., T.D. 5,005 ft.

ALABAMA DRILLING REPORT

Colbert County

Mellen & Gear 1 Alsobrook, S½ SW NW 10-4s-15w, S.D. 1,048 ft., show gas in Trenton.

(Continued on Page 93)

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Personal Paragraphs

AL WYNN has been named district geologist at Wichita, Kans., for the Kerlyn Oil Co., of Oklahoma City, Okla.

N. C. McGOWEN, Shreveport, La., president of the United Gas group of companies, was the principal speaker at the annual banquet and meeting of the Beeville, La., Chamber of Commerce last week. Mr. McGowen was introduced by JAMES R. DOUGHERTY, Beeville oil man and attorney.

LEONARD C. RITTS, formerly vice president and treasurer of the Devonian Oil Co., has been made president of the company, succeeding the late Archibald W. Leonard. E. S. CALVERT, production superintendent, was advanced to vice president, H. E. DEAN to treasurer, and H. E. GEIGER assistant secretary. H. C. MILHOAN was made a director of the company.

M. S. BOLINGER and A. F. BURNS, Arkansas-Louisiana Gas Co., will present papers before the annual convention of the Southern Gas Association, in Dallas, February 10, 11 and 12.

M. C. COLEMAN, of Tide Water Associated Oil Co., has been appointed sales supervisor of the San Francisco district. Mr. Coleman succeeds EMORY BRONTE, who was granted a leave of absence to serve as a lieutenant commander in naval aviation at Washington, D. C.

D. O. BRANSON, formerly in the scouting department of Stanolind Oil & Gas Co.'s Leesville, La., office, has been transferred to Midland, Tex., where he will be scout for the Southeast New Mexico district, succeeding MAYNE MOORE who was recently promoted to the geological department of the company's Midland office.

GEORGE E. EDGETT, after completing a span of service totaling 30 years, 11 months with Carter Oil Co., Tulsa, retired from active duty January 31 amid the congratulations and best wishes

George E. Edgett and J. J. Conry

of his business associates and fellow employes. Mr. Edgett, at the time of his retirement, was in charge of the gasoline division of the company's production department. His retirement was commemorated with a dinner at the Tulsa Club given in his honor by a group of 17 associates. He was presented by S. F. MAUNEY, JR., Carter chemical engineer, with a set of golf clubs and bag, a present from the group. J. J. CONRY, president, and O. C. SCHORP, vice president of Carter, attended the function. Mr. Edgett plans to remain in Tulsa.

CHARLES E. BALLARD, formerly with Humble Oil & Refining Co., at Midland, Tex., has gone with Cherry, Kidd & Sloan, Evansville, Ind., as chief accountant.

F. A. STIVERS, vice president and general manager of the Texas Empire Pipe Line Co., Tulsa, has been chosen to lead the Tulsa area Boy Scout Council for the next year.

R. J. ST. GERMAIN, independent operator, Houston, Tex., has been appointed chairman of the finance committee in the Houston district of the Independent Petroleum Association of America.

H. C. COCKBURN, independent operator, Houston, Tex., has been granted a charter for the Texas Tin Corp., Houston. Mr. Cockburn plans to import tin from Durango, Mexico, and process and sell it at a plant to be constructed in Houston.

GEORGE E. BURTON, district geologist for Sun Oil Co., Midland, Tex., has been transferred to the Tyler office of the company. Mr. Burton has been in Midland for over a year, moving from San Angelo.

R. S. ELLISON, president of Stanolind Pipe Line Co. and Stanolind Oil Purchasing Co. until his retirement a few months ago, was recipient of an honorary life trusteeship in the Oklahoma State Archeological Society. The honor was a gesture of appreciation of the fine work that Mr. Ellison had rendered as an amateur archeologist while with Stanolind. Mr. Ellison lives in Manitou, Colo.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

British Oil Concessions, Ltd., sold out its Venezuelan properties to Shell for £50,000.

Oklahoma oil producers held a meeting to consider means of fighting the gross-production tax bill which is now being considered by the state senate. The bill provides for a tax of 2 per cent.

Since the discovery of oil in Butler County, Kansas, operators are being attracted to Greenwood County as a result of the discovery of a good gas well near Eureka.

20 YEARS AGO

The new Huntington Beach field in California now has 40 wells drilling. The field cannot be classified as a gusher field at this time, but there is every indication that it will help solve California's oil shortage during the coming year.

D'Arcy Exploration Co., a subsidiary of the Anglo-Persian Oil Co., has concluded an agreement with the Hungarian Government which gives it virtual control of the oil fields in Hungary, which now only await discovery.

10 YEARS AGO

The Iowa pool on the Calcasieu-Jefferson Davis Parish line was definitely proved as another Gulf Coast field.

All that remains to prove East Texas to be the largest field in the world is the linking up of the Joiner, Bateman and Lathrop discoveries. Several supply houses have been built at Kilgore which is only a wide place in the road.

E. E. MOORE is now chief engineer of the Arrow Drilling Co., Tulsa. He was with the firm for a time, but left to go with a supply company.

J. P. STRAIGHT, Cities Service Oil Co., Gladewater, Tex., is cochairman of the regular spring meeting of the Southwestern district, A.P.I., to be held in Shreveport, La., February 27-28.

L. F. SCHERER, assistant chief engineer for the Texas Pipe Line Co., Houston, Tex., addressed the Houston Engineers Club on "Transportation of Petroleum Products" the past week.

JOHN H. TUCKER, general superintendent of production, Gulf Oil Corp., Houston, Tex., who has been ill for several weeks, is expected to leave this week for a rest and vacation trip of several weeks in California.

W. A. RUSSELL, of Seaboard Oil Co., president of the Los Angeles Petroleum Accountants Society, had as his guest at the last meeting M. D. WILSON who discussed "Highlights on the Excess Profits Tax Under the Second Revenue Act of 1940."

A. T. JERGINS, president of Jergins Oil Co., has been spending considerable time in Bakersfield and Fresno, Calif., during the past several weeks at the company's wildcat on the Cheney ranch north of Coalinga, in Fresno County, has reached the critical depth.

FRANK J. SEARIGHT, Carmi, Ill., a prominent wildcatter, was a Tulsa visitor last week. Mr. Searight opened the pool which bears his name, just north of Seminole.

J. R. HALLEY, formerly in the production department of Texas Co.'s Fort Worth, Tex., office, has been transferred to the company's production department in Houston, Tex.

HARVEY E. HARRIS, Los Angeles, Calif., has been installed as executive secretary of the recently organized Lubricating Oil Manufacturers and Marketing Association.

K. G. MACKENZIE, technical assistant to W. S. S. RODGERS, president of the Texas Co., has been made chairman of the 1941 automotive survey committee functioning under the A.P.I. refinery technical committee.

F. B. BIMEL and B. A. MYERS, directors of International Petroleum Co., Toronto, and WARREN SMITH, vice president of Pantepec Oil Co., New York, sailed last week for Venezuela on the Grace Liner Santa Paula.

HARRY MACE, independent oil man of Coleman, Tex., has been named assistant supervisor for the Oil and Gas Division of the Texas Railroad Commission in its San Antonio, Tex., office.

JAMES A. BUTTS has been advanced from district engineer to deputy supervisor with the Texas Railroad Commission, Kilgore. He is succeeded by A. S. TRUBE, new district engineer.

A. J. CUNNINGHAM, general manager of the Standard Oil Co. of Texas, has been appointed president of the board of directors. The board of directors includes H. D. COLLIER, chairman, San Francisco, Calif.; E. H. TODD, vice president, El Paso, Tex.; R. J. McINTYRE, secretary-treasurer, El Paso, and W. H. BURGES, El Paso.

Is Traffic Authority

C. R. Musgrave, vice president in charge of traffic for Phillips Petroleum Co., Bartlesville, Okla., spent 12 years with the Santa Fe Railroad before joining the Phillips organization. During his railway career he studied traffic management and law as applied to transportation.

C. R. MUSGRAVE

Mr. Musgrave's first position with Phillips was that of assistant traffic manager, in 1922. A year later he was appointed traffic manager, and in 1927 he became general traffic manager. His appointment as vice president in charge of transportation came in 1930.

His duties have recently been enlarged, in that he now directs the company's new gasoline pipe-line department. This department was created a few weeks ago when all gasoline pipe-line activities of Phillips Petroleum Co. were combined. The new department will operate the gasoline pipe line from Borger, Tex., to East Chicago, Ind. Thus, all transportation facilities used by the company in the distribution of its manufactured products are under one authority.

Mr. Musgrave is a member of the General Transportation Committee and Central Committee on Pipe-Line Transportation and Car Service, A.P.I., Governor's Advisory Council, Unemployment Compensation of the State of Oklahoma; Bar Association of Practitioners Before the Interstate Commerce Commission; Mid-Continent Oil and Gas Association, and Independent Petroleum Association of America. He has an intimate knowledge of every type of transportation and his prominence is indicated by the fact that he is now serving his second term as president, chairman executive committee, and director of Associated Traffic Clubs of America.

J. C. BONHAM, SR., and J. C. BONHAM, JR., Houston, Tex., have organized the Rockland Oil Corp. with headquarters at Houston.

R. E. BRIGHAM, who headed the land department in Michigan for Cities Service Oil Co., has been transferred to Wichita, Kans.

B. E. GEORGE, Lyons Oil Co., Lyons, Kans., is the new president of the Kansas Independent Gasoline Distributors Association.

E. B. REESER, president of Barnsdall Oil Co., was in Los Angeles, Calif., recently in connection with a bid made for potential oil land in Los Angeles County.

GLENN J. UMBARGER, Indian Territory Illuminating Oil Co., production department, is the new chairman of the Bartlesville (Okla.) Doherty Men's Fraternity.

JAMES H. ISHERWOOD, president, North Penn Gas Co., Port Allegany, Pa., addressed the Bradford, Pa., Rotary Club, January 27, outlining new methods of storing natural gas.

CLIFF V. PERRY, Kansas City, Mo., attorney for Skelly Oil Co., has been appointed chairman of the Missouri Petroleum Industries Committee, succeeding JUDGE JAMES P. KEM, who served the past 2 years.

RAY C. INGRAM, of Union Oil Co., Los Angeles, Calif., has been appointed division sales manager, central division, succeeding S. D. HERKNER who is retiring. Mr. Ingram, in addition to his sales ability, is an authority on asphalt and road oil.

PAUL GETTY, president of George F. Getty, Inc., and head of Pacific Western Oil Co., is spending a few weeks in Mexico City on a combined business and pleasure trip but will return to his Los Angeles, Calif., office early in February.

THEODORE M. CADY has been appointed superintendent of the land department, Texon Oil & Land Co. He will have his headquarters in Wichita, Kans. Mr. Cady was formerly associated with Continental Oil Co. as district land man at Centralia, Ill. Prior to his connection with Continental in 1937, Mr. Cady was employed by White Eagle Oil Co., and by M. A. WALLACE, Kansas oil operator.

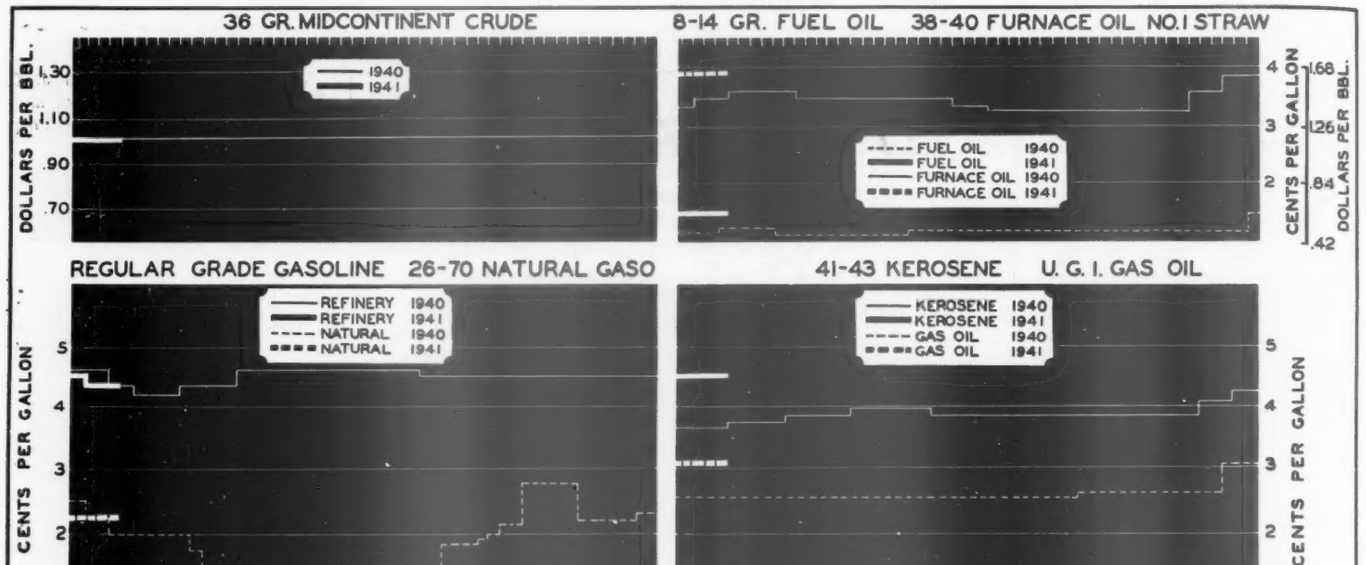
Shifts: E. F. BERRYMAN, engineer, Stanolind Oil & Gas Co., from Stratford, Kans., to Brownfield, Tex.; EDWARD M. SCHLAFFKE, engineer, Texas Co., from Crane, Tex., to Midland, Tex.; ROBERT B. WILKINS, engineer, Phillips Petroleum Co., from Phillips, Tex., to League City, Tex.; H. F. SMITH, superintendent, Magnolia Pipe Line Co., from Electra, Tex., to Wichita Falls, Tex.; J. M. RICH, geologist, Carter Oil Co., from Natchitoches, La., to Tulsa; C. J. HARES, geologist, Ohio Oil Co., from Marshall, Ill., to Casper, Wyo.; T. J. DANIEL, superintendent, Bed Rock Petroleum Co., from Salyersville, Ky., to Oil Springs, Ky.; R. E. IRBY, superintendent, Socony-Vacuum Oil Co., Inc., from New York City to Upper Montclair, N. J.; C. S. CORBERT, geologist, Socony-Vacuum Oil Co., Inc., from Westfield, N. J., to New York City; JAMES H. RICHARDS, engineer, Gulf Oil Corp., from Seminole, Okla., to Tulsa, and E. H. SHANNON, engineer, Texas Co., from Brenham, Tex., to Marlin, Tex.

RALPH B. ROARK, vice president of Shell Oil Co., Tulsa, has been named cochairman of the executive committee which will conduct a drive for funds for the First Methodist Church. The funds will be used to pay off the indebtedness of the church.

FRANCIS C. FARLEY has been elected secretary of the West Virginia Petroleum Association, Charleston, W. Va. He succeeds the late Edwin F. Patrick. Mr. Farley is a former instructor in Marshall College, and will be recalled as one of West Virginia University's star football players of 15 years ago.

M. L. MAYFIELD, for the past 3 years stationed at Gladewater, Tex., as production engineer for Cities Service Oil Co., and also secretary of the East Texas Society of Mining and Metallurgical Engineers, has moved to Cotton Valley, La., to take a position as engineer for the Cotton Valley Operators Committee. J. N. MILES, petroleum engineer with Cities Service Oil Co., Great Bend, Kans., has been transferred to East Texas to replace Mr. Mayfield.

JOHN CHISHOLM, for the past 3 years scout for the Texas Co., has been transferred from the Wichita Falls, Tex., district to the West Central Texas division, with headquarters at Abilene. He will be succeeded in Wichita Falls by C. D. GEORGE, transferred from Abilene. A. L. DRAPER, Humble Oil & Refining Co. scout in the South Coast division, has been transferred from Corpus Christi to the Wichita Falls district and will carry on in the district formerly covered by M. M. BATES, who has been ill for several months and is on a leave of absence.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Mid-Continent Refiners Unable to Bid On Growing Residual-Fuel Demand

By H. STANLEY NORMAN

SEARCH for residual fuel in the Mid-Continent refinery market is becoming more intense with each passing week and this is no exception to the rule that has been gaining solidarity in direct ratio to progress of the defense program. Residual fuels for open-market offering are not plentiful in the Mid-Continent district, partly because of the basic character of refining stocks and, furthermore, because of the long-established practice of committing heavy fuels to railroads on long-term contracts.

Stocks of residual fuel in the Mid-Continent refining district, including inland Texas, Oklahoma, Kansas and Missouri total around 4,000,000 bbl., which cannot possibly leave much material available for open-market trading. The apparent near balance of stocks with working requirements leaves this particular district in an illy equipped position to bid on spot-market inquiries. The combination of circumstances leaves the few plants with a surplus of residual over their contract commitments in position to ask and obtain top of the currently quoted market for heavy fuels and frequently a premium is thrown into the bargain.

Gasoline Contrastingly Weak

Continued softness of the motor-fuel market is in sharp contrast to the residual fuel conditions. There has been no additional break in the general tank-car price structure but conditions offer scant opportunity for improvement. Offers of condensate from Texas and Louisiana recycling plants is growing in volume constituting a continuing and growing menace to refinery gasoline. Sellers of condensate continue to offer material that qualifies in many respects for regular grade gasoline at prices 0.5 to 0.75 cent per gallon under the current refinery gasoline tank-car quotations.

Refined Oil Market Barometer

Improvement in the lubricating-oil market is spreading from the Pennsylvania district to the Mid-Continent and Gulf Coast sections. Colder weather in the northeast has stimulated demand for distillate fuel oils resulting in a more rapid liquidation of stocks. Middle western industrial consumers are searching the Group 3 market for residual fuels.

MID-CONTINENT: Demand for residuals exceeds supply. Other products steady.

GULF COAST: Distillate market stiffens in sympathy with East Coast conditions.

CALIFORNIA: Tone of fuel oils growing stronger. Gasoline inventory high.

PENNSYLVANIA: Lubricating-oil demand and prices continue improvement.

CHICAGO: Gasoline prices advanced 0.5 cent in Lower Michigan.

The volatility of recycle-plant condensate may make the material less attractive in warm weather when evaporation losses reach a maximum but it offers stiff competition for winter consumption.

Improvement in the statistical position of motor fuel gained momentum in the past 2 weeks in comparison with the same period in 1940. Considering that aviation-gasoline stocks now account for nearly 6,250,000 bbl. of the total finished and unfinished motor-fuel supplies, the improvement becomes even more impressive. Automobile-engine gasoline held in storage by the industry now totals roughly 83,000,000 bbl. compared to about 86,000,000 bbl. at this time a year ago. Aviation-gasoline stocks a year ago were only about 3,660,000 bbl., amounting to roughly 4 per cent of the total finished and unfinished motor fuel. Now, this high-octane material represents 7 per cent of the aggregate.

Movement of motor fuel from the Mid-Continent refining district into the middle-western market continues at a satisfactory level. Preliminary figures for January indicate that a comfortable increase in consumption for the country as a whole will be reflected when complete data are assembled. In retrospect, the indicated improvement of last month over a year ago is not surprising since January 1940 was one of the coldest months of that winter and many parts of the country had snow that stagnated car operations.

Stocks Subdue Distillates

Distillate fuels, covering kerosene, range oil and light burner oils, are in firm demand for northern movement. Stocks of the distillate fuels, however, are too abundant to permit development of a snap to this market. Any display of resistance to the current quotations diverts inquiries to other sources of supply.

Reports on the December shipments of distillate fuels from the Mid-Continent refinery district indicate that demand increases from the Middle West are being influenced to a growing extent by the defense program. Shipments of No. 1 white (kerosene) from the Mid-Continent increased almost 30 per cent in December over November. Other distillate fuels enjoyed a more modest increase.

There is no material change in the market conditions for natural gasoline. The Oklahoma tank-car price of 2¾ cents per gallon is steady with demand apparently well balanced against production. The same situation prevails in Texas where the base price for interstate shipment on 26-70 material is 2 cents.

Liquidation of Distillate Fuels Is Speeded on Eastern Coast

By J. P. O'DONNELL

NEW YORK, Feb. 4.—A full week of subfreezing temperatures throughout the northeastern marketing area returned some strength to the wavering fuel-oil market, but there was no improvement in the generally quoted price of 4.5 cents, off 0.4 cent from early January quotations. The return of cold weather is expected to result in the most marked reduction in East Coast inventories since the beginning of the season; but despite the indicated curtailment in supplies, they are still regarded as more than ample.

Stocks of gas oil and distillate on the East Coast totaled 14,292,000 bbl. on the last Saturday of January. This figure compared with a high of 15,635,000 bbl. reached on the first Saturday of the month following substantial additions to inventories during the final 2 weeks of December. The season's high was 18,444,000 bbl. reached on October 19.

Stock Withdrawals Increase

Withdrawals since the early January high averaged 64,000 bbl. per day, a substantial increase from the average of 42,500 bbl. since the season's storage peak of last October. If reductions are maintained at the comparatively high rate that has continued since January 4, stocks will be down to approximately 10,000,000 bbl. by March 30, normal for the end of the heating-oil season. That figure would contrast with a level of 5,627,000 bbl. on March 30, 1940.

Light-fuel-oil stocks of 14,292,000 bbl. on January 25 this year compared with 7,488,000 bbl. on the corresponding date of 1940, up 90 per cent. While this is a marked increase from a percentage standpoint, the indicated increase in demand this year will offset it to a large extent. However, the market has reflected this condition and a definite price improvement is not anticipated unless protracted cold weather results in more substantial withdrawals from stocks.

The fact that East Coast stocks of fuel oil are at least temporarily adequate is apparent from the tanker market which has eased down considerably from December highs. Among the few charters reported during the past week was one that will unload at Boston and therefore will command an additional 5-cent per barrel rate. This tanker was fixed on the basis of 52 cents for gasoline, 54 cents for kerosene and 57 cents for No. 2 heating oil. The additional 5 cents will make the rate to Boston 57 cents for gasoline. This rate is currently average for Gulf-to-north-of-Hatteras clean-tanker charters, which have been between 55 and 60 cents per barrel for No. 2 heating oil since leveling off after the rapid recession from the 80-cent heating oil rates reached during the first half of December.

The tone of the kerosene market has improved in sympathy with the fuel-oil improvement, but the tank-car price of 5.1 to 5.5 cents per gallon in the New York Harbor area is unchanged from the previous week. The 5.1-cent low is a drop of 0.4 cents from the early January high, which is still quoted by one major supplier. Evidence of the weakness in secondary markets is seen in a reduction early last week in kerosene and No. 1 fuel-oil prices throughout New Jersey. These prices were reduced 0.2 cent to 7.7 cents per gallon. Posted tank-wagon prices on No. 2 and No. 3 fuel oils were likewise reduced in northern New Jersey and are now 6.5 cents for both grades.

Lubricating Market Advances

Last week's reduction in diesel oil, which brought Atlantic Coast prices down to $1.95 per barrel at Boston, $1.85 at New York, $1.95 at Philadelphia, $1.95 at Baltimore, and $1.95 at Charleston, was also attributed to excess supplies. Bunker C fuel-oil prices remain steady at $1.25 per barrel in the New York Harbor area and demand is reported entirely satisfactory.

The Pennsylvania lubricating-oil market is reported stronger, a report that has been fully substantiated by recent increases in bright-stock prices. Export prices on 25-pour bright stock have been advanced 1.5 cents, and one seller is quoting 0.5 cent higher on both 200 and 150-viscosity neutral. The latter may presage an increase in inland-refinery prices, which have remained at 19 and 21 cents, respectively, for 150 and 200-viscosity material for months.

The spurt in the Pennsylvania lubricating-oil market is laid to domestic demand with a number of non-Pennsylvania majors buying in large quantities, according to a broker. At the same time some Pennsylvania refiners are disturbed by the advancing crude-oil price, which is claimed to have more than offset the benefits gained by the appreciation in refined-product prices. However, the continued substantial excess of refinery demand for crude overproduction is imparting additional strength to the Pennsylvania crude market. For the last week for which comparable figures are obtainable, this excess totaled 45,000 bbl. If this relationship between demand and production is continued, higher instead of lower crude-oil prices are a certainty.

During the last few weeks, quotations on Pennsylvania bright stock have increased 2 cents, lifting 25-pour and 10-pour stocks to 14 and 16 cents, respectively. The 12 to 14-cent range had pre-

(Continued on Page 93)

Dull Trading Holds Gulf Refined Market in Check

HOUSTON, Tex., Feb. 4.—Although open gasoline quotations on the Gulf Coast were being held at previous nominal levels, market weakness was in evidence as a result of the continued inactivity in trading. No buying of any consequence has been reported since early in January, when purchases of approximately a dozen cargoes were followed by advances of an eighth to a quarter cent in quotations. Evidence of weakness was given in a quiet offer made during the week by one refiner of 72-74-octane leaded gasoline at 3⅞ cents Marketers stated they could fill all requirements at that figure if they wished material. General quotations on such gasoline were from 4 to 4¼ cents.

Several refiners are reported as being extra long on gasoline at this time and in urgent need of moving material or else providing additional storage.

Both burning oils and fuel oils continued to mark time. Neither of these products is overly firm, yet neither can be classed as definitely weak. No important sales of either were reported during the week. No. 2 fuel oil of substandard specifications still was available from some sources in limited quantities as low as 3 cents. But bottom quotations were being maintained generally at 3⅛ cents. With heavy supplies on the East Coast, the principal outlet for Gulf Coast material, and the heavy buying season drawing to an end, unless protracted cold weather sets in, there is little in sight for the Gulf Coast market. However, Gulf Coast sources of supply still are not excessively burdened with material.

With fuel oils, however, the pros-

(Continued on Page 93)

A.P.I. Weekly Refinery Statistics

Week Ended February 1, 1941

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	19,062,000	9,543,000	13,731,000	548,000
Appalachian	91.0	3,304,000	429,000	443,000	133,000
Ind., Ill., and Ky.	90.2	16,979,000	2,930,000	3,634,000	588,000
Okla., Kans., and Mo.	76.9	7,969,000	2,038,000	1,259,000	284,000
Inland Texas	59.6	1,999,000	1,519,000	392,000	110,000
Texas Gulf	89.2	13,720,000	7,569,000	6,358,000	917,000
Louisiana Gulf	97.6	3,148,000	2,251,000	982,000	138,000
N. Louisiana and Ark.	51.5	529,000	480,000	317,000	49,000
Rocky Mountains	56.0	1,429,000	436,000	162,000	53,000
California	87.3	16,225,000	71,518,000	9,716,000	518,000
Total reported	86.2	84,364,000	98,713,000	36,994,000	3,338,000
Est. unreported	.....	6,500,000	1,715,000	640,000	342,000
*Est. total	.....	†90,864,000	100,428,000	37,634,000	3,680,000
*Est. total previous wk.	.....	88,762,000	100,297,000	39,039,000	3,625,000
*Feb. 2, 1940	.....	91,272,000	102,685,000	26,397,000	3,395,000

*Bureau of Mines. †Includes 6,299,000 bbl. of aviation gasoline.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended January 25, 1941	260,093,000 barrels
Week ended January 18, 1941	259,934,000 barrels
Week ended January 27, 1940	237,339,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of February 4, 1941

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Dir.	Incl. tax	Kero. tank wag.
Chicago, Ill.	14.6	12.6	4.5	10.0
Decatur	14.6	13.1	4.5	10.0
Joliet	15.6	14.1	4.5	10.0
Peoria	15.6	13.2	4.5	10.0
Quincy	15.4	13.9	4.5	9.8
Davenport, Ia.	15.6	14.1	4.5	‡10.0
Des Moines	15.4	13.9	4.5	‡9.8
Mason City	15.8	14.3	4.5	‡10.2
Duluth, Minn.	16.4	14.9	4.5	10.8
Mankato	16.0	14.5	4.5	9.5
Minneapolis	16.0	14.2	4.5	10.4
LaCrosse, Wis.	17.0	15.5	5.5	10.4
Green Bay	17.4	15.9	5.5	10.8
Milwaukee	16.8	15.3	5.5	10.2
Detroit, Mich.	14.1	12.6	4.5	8.1
Grand Rapids	14.8	13.3	4.5	9.1
Saginaw	14.9	13.4	4.5	9.1
Evansville, Ind.	16.6	15.1	5.5	†9.8
Indianapolis	16.8	14.8	5.5	†10.0
South Bend	16.8	15.3	5.5	†10.0
Fargo, N. D.	18.2	16.7	5.5	11.6
Huron, S. D.	17.5	16.0	5.5	10.9
Kans. City, Mo.*	14.9	11.9	4.5	8.6
St. Louis*	14.7	13.2	4.5	9.6
St. Joseph	14.9	13.0	4.5	8.4
Wichita, Kans.	13.8	12.3	4.5	7.2

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off; minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Dec. 2, 1940, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9.0 cents; 100-149 gal., 8.0 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex fuel oil A, 1-399 gal., 6.0 cents; 400-790 gal., 5.0 cents; 800 gal. and over, 4.75 cents. Stanolex fuel oil B, 1-399 gal., 6.0 cents; 400-799 gal., 5.0 cents; 800 gal. and over, 4.75 cents. Stanolex Bunker C fuel oil, 1-999 gal., 4.75 cents; 1,000 gal. and over, 3.75 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Dividend dir.	Incl. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank car	Dir. tank wag.	Incl. tax	Kero. tank wag.
Atlantic City	11.00	12.60	4.5	7.7
Newark	11.00	12.60	4.5	7.7
Annapolis, Md.	12.85	14.35	5.5	9.5
Baltimore	12.25	13.75	5.5	8.60
Cumberland	13.65	15.15	5.5	10.0
Washington, D.C.	10.50	12.00	3.5	9.5
Danville, Va.	14.45	16.95	6.5	9.0
Norfolk	13.25	15.75	6.5	10.5
Petersburg	13.55	16.05	6.5	11.2
Richmond	13.55	16.05	6.5	11.0
Roanoke	14.75	17.25	6.5	11.0
Charles'n, W. Va.	14.05	16.55	6.5	11.5
Parkersburg	13.35	15.85	6.5	11.2
Wheeling	14.35	16.85	6.5	11.8
Charlotte, N. C.	16.40	15.5	7.5	9.8
Hickory	16.95	18.45	7.5	9.7
Mt. Airy	16.80	16.00	7.5	10.8
Raleigh	16.15	16.00	7.5	10.1
Salisbury	16.45	14.50	7.5	10.5
Charleston, S. C.	14.25	16.75	7.5	9.25
Columbia	15.10	17.60	7.5	(*)
Spartanburg	15.80	18.30	7.5	12.2

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery; 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Net dir.	Incl. tax	Kero. tank wag.
Atlanta, Ga.	15.0	15.0	7.5	9.0
Augusta	15.5	15.5	7.5	9.5
Macon	15.0	15.0	7.5	9.0
Savannah	15.5	15.5	7.5	9.0
Birmingham, Ala.	16.5	16.5	8.5	8.0
Mobile	15.5	15.5	9.5	8.0
Montgomery	18.0	18.0	9.5	10.0
Jackson, Miss.	15.0	15.0	7.5	9.0
Vicksburg	15.5	15.5	7.5	8.5
Jacksonville, Fla.	16.0	16.0	8.5	8.0
Miami	16.0	16.0	8.5	8.0
Pensacola	17.0	17.0	9.5	8.0
Tampa	16.0	16.0	8.5	8.0
Lexington, Ky.	15.5	15.5	6.5	9.0
Covington	13.5	13.5	6.5	9.0
Louisville	15.0	15.0	6.5	8.5
Paducah	13.5	13.5	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank car	Dir. tank wag.	Incl. tax	Kero. tank wag.
Philadelphia, Pa.	12.5	13.5	5.5	10.0
Pittsburgh	13.0	15.0	5.5	10.5
Allentown	13.0	14.5	5.5	10.5
Erie	12.5	15.0	5.5	10.0
*Scranton	13.0	14.5	5.5	10.5
Altoona	13.0	15.0	5.5	10.5
Dover, Del.	...	14.0	5.5	10.5
Wilmington	...	13.5	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck	Serv. sta.	Incl. tax	Kero. tank wag.
San Francisco	16.5	17.5	4.5	11.5
Los Angeles	16.0	17.0	4.5	10.0
Fresno, Calif.	17.5	18.5	4.5	12.5
Phoenix, Ariz.	20.5	21.5	6.5	*17.5
Reno, Nev.	19.5	20.5	5.5	13.5
Portland, Ore.	19.0	20.0	6.5	13.5
Seattle, Wash.	19.0	20.0	6.5	13.5
Spokane	20.5	21.5	6.5	16.5
Tacoma	19.0	20.0	6.5	13.5

*Includes 5-cent state tax.

Discount to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Cons'r tank car	Dir.* wag.	Incl. tax	Kero. tank wag.
Albany	11.8	12.0	5.5	7.8
Met. New York	12.3	12.5	5.5	8.0
Buffalo	13.0	13.5	5.5	8.1
Rochester	13.2	13.7	5.5	8.6
Syracuse	12.5	10.7	5.5	8.8
Portland, Me.	12.0	11.7	5.5	8.0
Manchester, N.H.	13.2	12.1	5.5	8.9
Burlington, Vt.	11.8	12.0	5.5	8.3
Boston, Mass.	10.7	10.7	4.5	8.0
Worcester	11.3	11.5	4.5	8.0
Hartford, Conn.	11.3	11.5	4.5	7.5
New Haven	11.1	11.3	4.5	7.7
Providence, R. I.	10.7	11.7	4.5	8.0

*Undivided.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consumer price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Denver, Colo.	14.5	5.5	10.5
Grand Junction	16.5	5.5	12.0
Pueblo	15.5	5.5	9.0
Casper, Wyo.	16.5	5.5	11.5
Cheyenne	12.0	5.5	11.0
Billings, Mont.	16.5	6.5	12.0
Butte	15.5	6.5	13.0
Great Falls	15.5	6.5	12.0
Helena	15.5	6.5	12.5
Salt Lake, Utah	16.0	5.5	14.0
Boise, Idaho	†18.6	6.5	16.0
Twin Falls	†19.6	6.5	16.5
Albu'que, N. M.	*16.0	7.0	9.5
Roswell	*14.0	7.0	8.0
Santa Fe	‡17.0	7.5	9.5

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank car	Dir. tank wag.	Incl. tax	Kero. tank wag.
New Orleans, La.	14.25	16.75	8.5	‡10.0
Baton Rouge	14.75	17.25	8.5	‡10.5
Alexandria	14.75	17.25	8.5	‡10.5
Lafayette	15.00	17.50	8.5	‡10.0
Lake Charles	14.75	17.25	8.5	‡10.0
Shreveport	14.00	16.50	8.5	10.0
Knoxville, Tenn.	18.00	20.00	8.5	12.5
Memphis	16.00	18.00	8.5	11.0
Chattanooga	17.50	17.35	8.5	12.0
Nashville	17.00	17.50	8.5	11.0
Bristol	18.25	18.75	8.5	12.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Texarkana, Ark.	13.5	5.5	6.0
Fort Smith	13.5	5.5	6.5
Little Rock	16.0	8.0	8.0
Muskogee, Okla.	13.5	5.5	7.0
Oklahoma City	12.5	5.5	6.5
Tulsa	12.5	5.5	6.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Dir.	Incl. tax	Kero. tank wag.
Omaha	17.4	15.9	6.5	9.8
McCook	17.0	14.4	6.5	9.5
Norfolk	17.5	15.9	6.5	9.9
North Platte	17.8	16.0	6.5	10.2
Scottsbluff	17.4	15.0	6.5	10.8

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Dir.	Incl. tax	Kero. tank wag.
Dallas, Tex.	11.5	15.5	5.5	6.0
Fort Worth	11.5	15.5	5.5	7.0
Houston	12.0	16.0	5.5	8.0
San Antonio	12.5	17.0	5.5	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Halifax, N. S.	24.5	10.0	18.0
St. John, N. B.	24.5	10.0	18.0
Montreal, Que.	24.0	8.0	16.5
Toronto, Ont.	24.5	8.0	17.0
Hamilton, Ont.	24.5	8.0	17.0
Winnipeg, Man.	27.5	7.0	22.5
Brandon, Man.	28.0	7.0	22.5
Regina, Sask.	25.0	7.0	20.0
Saskatoon, Sask.	28.0	7.0	23.0
Edmonton, Alta.	25.9	7.0	20.0
Calgary, Alta.	23.0	7.0	18.0
Vancouver, B. C.	21.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers, 1 cent below tank-wagon price. In Maritime Provinces both divided and undivided dealers pay tank-wagon price.

Tank-Wagon Changes

Standard Oil Co. of New Jersey made a general reduction of the kerosene tank-wagon prices of 0.15 cent per gallon throughout North Carolina, effective January 20.

Standard Oil Co. of Louisiana advanced the dealer tank-wagon price of regular gasoline 1 cent per gallon at Nashville, Tenn., January 15 but on January 17 reduced the price 1 cent.

Standard of New Jersey reduced the dealer tank-wagon price of kerosene 0.2 cent per gallon January 20 throughout South Carolina.

Standard Oil Co. of Indiana advanced tank-wagon prices to consumers and to dealers on all grades of motor gasoline 0.5 cent per gallon, or to normal, throughout the lower peninsula of Michigan, effective February 3. On the same date the company advanced tank-wagon prices to consumers of tractor fuel 0.5 cent, or to normal, if the normalcy is less than 0.5 cent per gallon.

Standard of New Jersey reduced kerosene dealer tank-wagon prices 0.2 cent per gallon January 28 throughout New Jersey. Simultaneously, the company

(Continued on Page 93)

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of February 4, 1941

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04½
63-66 octane	.03⅞	.04⅛
60 octane and below	.03⅝	.03¾
60-62 400 grades:		
72-74 octane (regular)	.04⅜	.04½
63-66 octane	.04	.04¼
60 octane and below	.03⅝	.03¾

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04½
63-66 octane	.03⅞	.04⅛
60 octane and below	.03⅝	.03¾
60-62 400	.03⅝	.04½

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04½
63-66 octane	.03⅞	.04⅛
60 octane and below	.03¾	.03⅞

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04½
60 octane and below	.03⅝	.03¾

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04⅜	.04⅝
63-66 octane	.04	.04⅜
60 octane and below	.03⅝	.03¾
60-62 400 grades:		
72-74 octane (regular)	.04⅜	.04⅝
63-66 octane	.04	.04¼
60 octane and below	.03⅝	.03¾

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)		.06
72-74 octane		.05¾

CALIFORNIA (domestic movement)—

88-80 400, 65 oct. and higher	.05½	.07¼
84-88 U. S. Motor	.04½	.06¼

EAST COAST (domestic)—

U. S. Motor grades:		
New York (Bayonne)*	.05	.05¾
Philadelphia	.05½	.06½
Boston	.05½	.05⅞
Baltimore	.05½	.06¾
Charleston, S. C.	.05½	.06½

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
72-74 octane (leaded)	.03¾	.03⅞
70-72 octane (unleaded)	.03¾	.04
68-70 octane (unleaded)	.03½	.03¾
Below 68 octane (unleaded)	.03¼	.03½

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02⅜
Grade 18-55	.02⅜	.02⅞

NORTH TEXAS—

Grade 26-70		.02
Grade 18-55		.02⅜

CALIFORNIA—

75-85 375-390	.04½	.05¼

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.02

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110-flash, 540-550 e.p.	.03½	.03⅝
41-43 gr., 300-320 i.b.p., 110-125 flash, 500-520 e.p.	.03⅝	.03¾
46-48 gr., 210-230 i.b.p., 480-max., e.p.	.03⅞	.04

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.04¼	.04⅜
41-43	.04⅛	.04¼

NORTH TEXAS—

41-43	.04	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04	.04⅛

ARKANSAS (Ark. and N. La. del.)—

41-43	.04	.04¼

PENNSYLVANIA (inland refineries)—

46	.05⅛	.05⅝
45	.05¼	.05¼

CHICAGO (Based on Group 3)—

42-44	.04¼	.04⅜
41-43	.04⅛	.04¼

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04½	.05½

NEW YORK (Bayonne, N. J.)—

41-43	.051	.053

GULF COAST (domestic)*—

41-43	.03½	.03⅝

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.04	.04⅛
No. 1 prime white, 38-42	.03⅞	.04
No. 1 straw, 38-40	.03⅞	.04
No. 2 straw, 32-36	.03½	.03⅝
No. 3 zero to 10, 28-32	.03⅜	.03½

NORTH TEXAS—

No. 1 prime white, 38-42	.03¾	.03⅞
No. 1 straw, 38-40	.03⅝	.03¾

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03⅛	.03⅝

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03½	.03⅝

CHICAGO (Based on Group 3)—

Range oil	.04	.04⅛
No. 1 prime white, 38-42	.03⅞	.04
No. 2 straw, 32-36	.03¼	.03⅜
No. 3 zero to 15, 28-32	.03⅜	.03⅝

NEW YORK (Bayonne, N. J.)—

*No. 1	.051	.053
*No. 2	.045	.047
*No. 4	.045	.047

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.03¼	.03¼
No. 5, low pour point, 18-22	.75	.80
No. 6, 15 and above, 8-14	.60	.65

NORTH TEXAS—

U.G.I. gas oil, under 35	.03	.03⅛
No. 5, low pour point, 18-22	.75	.80
No. 6, 15 and above, 8-14	.60	.65

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial		.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.03⅛	.03¼
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 8-14	.60	.65

PENNSYLVANIA (inland refineries)—

36-40	.04½	.05

CALIFORNIA—

Los Angeles:

30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.60	.75
10-17 (high sulfur)	.50	.65

San Joaquin Valley:

10-18 (tank cars)	.55	.70
24 plus diesel, per bbl.	1.10	1.25

San Francisco:

24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.75	.80

GULF COAST—

No. 2 fuel	.03⅛	.03¼
43-47 diesel	.03⅛	.03¼
48-52 diesel	.03⅛	.03⅝
53-57 diesel	.03½	.03⅞
58-and-above diesel	.03⅝	.03¾
Diesel bunkers		1.50
Bunker C (bulk cargoes)	.75	.80
Bunker C (bunkers)		.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.04⅞
28-30 diesel (lighterage 6¼c per bbl.)		1.85
28-30 diesel (tank cars)	.047	.049
Bunker C (to ocean-going ships in N. Y. Harbor)		1.25
Industrial fuel (tank cars)		.03½

Lighterage charge 5c bbl. additional

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.18
150-160 D, 0-10		.13½
150-160 D, 10-25		.13
100-110 D, 0-10		.13
100-110 D, 10-25		.12½
Steam refined:		
600 dark green (untreated)		.07

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.16½
15 pour point		.15½
25 pour point		.14
Steam refined:		
600		.08
650	.08	.08½
600 flash	.09	.09½
630 flash	.11	.12

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.08
180-3		.08½
200-3		.08½
250-3		.10
280-3		.10½
280-4		.10
300-3½		.11
350-3½		.11½
400-3½		.12
500-3½		.12½
600-3½		.13
100-2½ paraffin oil, 10-25		.05¼
10-25 pour point:		
200-3		.08
250-3		.09½
280-3		.10
280-4		.09½

GULF COAST—

Pale oils:		
100-3	.05⅛	.05⅛
200-3	.07⅛	.07⅛
300-3	.07½	.07⅝
500-3½	.08¼	.08½
750-3½	.08⅝	.08¾
1,200-3½	.08¾	.08⅞
2,000-4		.09
3,000-4		.10½
Red oils:		
200-5-6	.06⅞	.07
300-5-6	.07¼	.07½
500-5-6	.08	.08¼
750	.08⅝	.08½
1,200-5-6	.08½	.08⅝

CALIFORNIA (moving to dom. market)

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07½	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11¼
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis., at 70° F., 3 color, 400-405 flash:		
Zero pour point		.22½
10 pour point		.21½
15 pour point		.20¼
25 pour point		.19
200 vis., at 70° F., 3 color:		
Zero pour point		.24½
10 pour point		.23½
15 pour point		.22¼
25 pour point		.21

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.02½	.02⅝

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale	.02¼	.02½
124-126 (A.m.p.) w.c. scale	.02¼	.02½

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax		.0560
128-130 (A.m.p.) wax	.0560	.0570
130-132 (A.m.p.) wax		.0585
133-135 (A.m.p.) wax		.0615
135-137 (A.m.p.) wax		.0640
Crude scale:		
124-126 (A.m.p.) w.s.	.02¼	.02½
124-126 (A.m.p.) y.s.	.02¼	.02½
Petrolatum in barrels, carload lots:		
Dark green	.02125	.02625
Amber	.02375	.02875
Extra amber	.02625	.03000
Lily white	.04375	.05125
Snow white	.05125	.06000
Cream	.03375	.04125

Export Prices

GASOLINE

GULF COAST—

60-62 400	.03¼	.04
61-63 390	.03¼	.04
64-66 375	.03¼	.04

LOS ANGELES—

U. S. Motor grades:		
Above 69 octane	.05½	.05¾
65-69 octane	.05¼	.05½
60-65 octane	.04½	.05

KEROSENE

GULF COAST—

41-43 water white	.03½	.03¾

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbl.)—

Cylinder stocks:		
600 S.R. unfiltered		.18
630 S.R. unfiltered		.20
600 flash, S.R.	.16	.17
650 flash, S.R.	.17	.17½
Bright stock:		
Light, 25 pour point		.22

NEUTRAL OIL

200-3 color	.27	.27½
150-3 color	.25½	.26

PARAFFIN WAX

NEW YORK (prices per lb.)—

123-125 A.m.p.		.0560
125-127 A.m.p.		.0560
128-130 A.m.p.		.0585
133-135 A.m.p.		.0615
135-137 A.m.p.		.0640
Crude scale:		
124-126 w.s.	.02¼	.02½
124-126 y.s.	.02¼	.02½

CRUDE-OIL PRICES...

Oklahoma, Kansas, North Central and East Central Texas

East Texas (Oct. 11, 1938)* $1.10
Sinclair Prairie Oil Marketing Co. October 2, 1939, De Soto Pipe Line October 2, 1939. Cities Service Co. October 5, 1939. Shell Oil, Inc., October 5, 1939.
Van, Tex. (Oct. 11, 1938)* $0.93
Talco, Tex. (Oct. 2, 1939)* ..... .65
Rodessa, Tex. .....
See North Louisiana gravity schedule
Cass and Panola counties, Texas .....
See note below
Altus and Tipton† ..... See note below
Cayuga, Tex. (Oct. 2, 1939) $0.78
Clay Creek, Tex. ..... .85
Long Lake, Tex. (Jan. 20, 1940) ... 1.08

*Humble Oil & Refining Co. †Gulf Refining Co. Pure Oil Co.'s Van price, 93 cents, effective Oct. 13, 1938.

Cass and Panola counties, Texas, effective October 12, 1938, by Magnolia Petroleum Co., same as North Louisiana prices in Column 5 gravity schedule.

Altus and Tipton, Oklahoma, starting at below 25° at 71 cents, 2-cent spread to 40° and above at $1.03. Cayuga posted by Pan American Pipe Line Co. Clay Creek by Sun Oil Co. Long Lake by Sinclair Oil Marketing Co.

West Texas

See gravity table.
Fisher County, Texas (Apr. 1, 1939)
See note below
Pecos County (Oct. 11, 1938)* $0.78
Pecos shallow (Oct. 11, 1938)† ..... .65

*Shell Oil Co., Inc., Gulf Pipe Line Co. and Humble Oil & Refining Co. †Shell Oil Co., Inc.

Fisher County, Texas, by Shell Oil Co., Inc., below 25°, 68 cents; 25°, 70 cents, with 2-cent spread to 40° and over at $1.

NORTH LOUISIANA AND SOUTHERN ARKANSAS

(Posted by Standard Oil Co. of Louisiana, Stanolind Oil & Gas Co., Lion Oil Refining Co. and Arkansas Fuel Oil Co.)

(Effective 7 a.m. October 17, 1940)

	1	2	3	4	5
Below 21 ..	$.55	...	...	$.75	$.91
21-21.9	.57	...	...	.77	.93
22-22.9	.59	...	...	.79	.95
23-23.9	.61	...	...	.81	.97
24-24.9	.63	$.73	$.83	.83	.99
25-25.9	.65	.75	.85	.85	1.01
26-26.9	.67	.77	.87	.87	1.03
27-27.9	.69	.79	.89	.89	1.05
28-28.9	.71	.81	.91	.91	1.07
29-29.9	.73	.83	.93	.93	1.09
30-30.9	.75	.85	.95	.95	1.11
31-31.9	.77	.87	.97	.97	1.13
32-32.9	.79	.89	.99	.99	1.15
33-33.9	.81	.91	1.01	1.01	1.17
34-34.9	.83	.93	1.03	1.03	1.19
35-35.9	.84	.94	1.04	1.04	1.20
36-36.9	.85	.95	1.05	1.05	1.21
37-37.9	.86	.96	1.06	1.06	1.22
38-38.9	.87	.97	1.07	1.07	1.23
39-39.9	.88	.98	1.08	1.08	1.24
40 and above	.89	.99	1.09	1.09	1.25

Column 1 applies to Atlanta, Buckner, Magnolia, Schuler (Jones sand and Reynolds lime) and Village fields.

Column 2 applies to Caddo, De Soto, Sabine, Fouke, Homer, Miller County, Sugar Creek, El Dorado (West, South and Rainbow) and Schuler (Morgan sand).

Column 3 applies to Bunkie, Eola and Olla.

Column 4 applies to Bayou Des Glaise, Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, North Crowley, Port Barre, Potash, Roanoke and St. Martinville.

Column 5 applies to University (Baton Rouge).

Big Creek, Dorcheat, McKamie distillates (sour) ..... $.95
Smackover (heavy)* ..... .73
Cotton Valley distillate 1.10
Cotton Valley crude 1.05
Cotton Valley (Holloway sand crude) 1.10
Rodessa, Shreveport (Cross Lake) .. 1.05
Schuler (Morgan sand), El Dorado and Rainbow 73-1.05
Tullos and Urania ..... .89
Lisbon, La. (Apr. 29, 1939) ..... .66-.82

Note—Stanolind purchases in Caddo Parish only.

*Smackover posted by Magnolia Petroleum Co., Oct. 12; by Gulf Refining Co., Oct. 13; McMillan Refining Co. and Cross Refining Co. met price. Tullos and Urania posted by Hunt Oil Co.

In the Lisbon, Louisiana, field, effective Sept. 14, 1939, Gulf Refining Co. and Caddo Crude Oil Purchasing Co. posted 27-27.9°, 66 cents, with 2 cents added for each degree up to 35 and over at 82 cents.

Gulf Coast

Seabreeze, Willow Slough, and LaBelle, Tex. (Sept. 14, 1938)*** $1.10
Conroe, Tex. (Oct. 11, 1938)* 1.27
Black Bayou and White Castle, La. (Oct. 11, 1938)‡ .....See note below
Gibson, La. (Oct. 11, 1938)† $1.04
Garden Island, La. (Oct. 12, 1938)‡. 1.24
Lafitte, La. (Oct. 12, 1938)† 1.04
Cleveland, Tex. (Oct. 12, 1938)¶ 1.14
Hardin, Tex. (Sept. 14, 1939)* 1.10
Tepetate, La. (Oct. 11, 1938)§ 1.03
Ville Platte, La. (Oct. 11, 1938)§ 1.03
Abbeville, La. (Jan. 1, 1939)§ .....
See note below
Bosco, La. (Dec. 3, 1938)‖ $0.93
Creole, La. (Oct. 13, 1938)‖ ..... .96
Vinton. Edgerly, Starks, Hackberry, Timbalier Bay, Quarantine Bay, and Grand Bay, La. (Oct. 2, 1939)**
Segno and Wing (Oct. 2, 1939)**
See note below
Happytown, La. (Jan. 12, 1940)† .. 1.00
Livingston (Oct. 11, 1938)† $1.10

*Humble Oil & Refining Co. †Shell Oil Co., Inc., ‡Texas Co. §Continental Oil Co. ‖Pure Oil Co. ¶Magnolia Petroleum Co. **Gulf Refining Co. ***Sun Oil Co. Hardin prices by Humble and Sun companies.

Black Bayou, etc., starts at below 20° at 79 cents; 20°-20.9°, 81 cents; 21°-21.9°, 83 cents; then a 3-cent spread to 26°-26.9°, 98 cents; then a 2-cent spread at 40° and over at $1.14. Abbeville starts at below 36°, 92 cents; 2-cent spread to 40° and over at $1.02. Segno and Wing take Gulf Refining Co.'s Gulf Coast prices. Vinton, Edgerly, etc., schedule starts at below 20°, 86 cents, 2-cent spread to 34° and above at $1.16. Shell Oil Co., Inc., withdrew as a purchaser in the Schwab-Wilcox area, Texas, on Apr. 8, 1940.

Hackberry, East and West, effective October 2, 1939, by Stanolind Oil & Gas Co. Below 20 gravity 86 cents, 2 cents added for each degree up to 34° and over at $1.16.

Iowa, La., effective October 11, 1938, by Shell Petroleum Corp. and on April 1, 1939, by Shell Oil Co., Inc.: Below 18°, 75 cents; 18°-18.9°, 77 cents; 2-cent spread to 21°-21.9° at 83 cents; then a 3-cent spread to 26°-26.9° at 98 cents; then a 2-cent spread to 34° and above at $1.14.

PURE OIL CO.
(Effective January 22, 1941)
Creole, Cameron Parish, La. $1.01
Gueydan light, Vermilion Parish, La. 1.03
Gueydan heavy, Vermilion Parish, La. ..... .89
Sweet Lake, Cameron Parish, La. .. .91

Southwest Texas

Salt Creek. Darst Creek, Hilbig, Carroll, Clark and Zoboroski (Oct. 11, 1938)* $0.96
Pettus (Oct. 11, 1938)* 1.29
Flour Bluff (Dec. 3, 1938)* 1.23
Jim Wells County (Oct. 2, 1939)* ... 1.23
Darst Creek (Oct. 12, 1938)† ..... .96

Crude Prices by Gravities

Gravity—	1 Oklahoma and Kansas	2 Oklahoma and Kansas	3 Oklahoma and Kansas	4 North and Central Texas	5 Louisiana and Arkansas	6 East Central Texas	7 Gray County, Texas	8 Carson and Hutchinson Counties, Texas	9 West Texas, and Lea County, N. M.	10 Raccoon, Satsuma, and Tomball, Texas	11 Gulf Coast	12 Anahuac, Dickinson, Texas	13 Refugio, Texas	14 Mirando-Duval, Beaumont-West Beaumont, Texas	15 Golden Meadow, Louisiana	16 Lockport, Iowa, Cameron Meadows, Louisiana	17 Clara Driscoll	18 Artesia, Jackson, Maljamar, N. M.
Below 18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	$.74	...	...
18-18.9	...	...	...	...	...	...	...	...	$.53	...	...	...	...	...	...	.76	...	...
19-19.9	...	...	...	...	...	...	...	...	.53	...	$.86	$.81	$.91	$.86	...	.78	...	...
20-20.9	$.70	...	$.60	...	...	...	...	...	.55	...	.88	.83	.93	.88	...	.80	$.93	...
21-21.9	.72	...	.63	...	...	...	...	...	.57	...	.90	.85	.95	.90	...	.82	.95	...
22-22.9	.74	...	.66	...	...	...	...	...	.59	$.95	.92	.87	.97	.92	...	.85	.97	...
23-23.9	.76	...	.69	...	...	$.78	...	...	.61	.97	.94	.89	.99	.94	...	.88	.99	...
24-24.9	.78	...	.72	$.71	$.73	.80	...	...	.63	.99	.96	.91	1.01	.96	$.90	.91	1.01	...
Below 25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25-25.9	.80	$.58	.75	.73	.75	.82	...	...	.65	1.01	.98	.93	1.03	.98	.90	.94	1.03	...
26-26.9	.82	.63	.78	.75	.77	.84	...	...	.67	1.03	1.00	.95	1.05	1.00	.90	.97	1.05	...
27-27.9	.84	.68	.81	.77	.79	.86	...	...	.69	1.05	1.02	.97	1.07	1.02	.90	.99	1.07	...
28-28.9	.86	.73	.84	.79	.81	.88	$.72	$.67	.71	1.07	1.04	.99	1.09	1.04	.90	1.01	1.09	$.61
29-29.9	.88	.78	.87	.81	.83	.90	.74	.69	.73	1.09	1.06	1.01	1.11	1.06	.90	1.03	1.11	.63
30-30.9	.90	.82	.90	.83	.85	.92	.76	.71	.75	1.11	1.08	1.03	1.13	1.08	.90	1.05	1.13	.65
31-31.9	.92	.86	.92	.85	.87	.94	.78	.73	.77	1.13	1.10	1.05	1.15	1.10	.92	1.07	...	.67
32-32.9	.94	.90	.94	.87	.89	.96	.80	.75	.79	1.15	1.12	1.07	1.17	1.12	.94	1.09	...	.69
33-33.9	.96	.96	.96	.89	.91	.98	.82	.77	.81	1.17	1.14	1.09	1.19	1.14	.96	1.11	...	.71
34-34.9	.98	.98	.98	.91	.93	1.00	.84	.79	.83	1.19	1.16	1.11	1.21	1.16	.98	1.13	...	.73
35-35.9	1.00	1.00	1.00	.93	.95	1.02	.86	.81	.85	1.21	1.18	1.13	1.23	1.18	1.00	..	...	.75
36-36.9	1.02	1.02	1.02	.95	.97	1.04	.88	.83	.87	1.23	1.20	1.15	1.25	1.20	1.02	...	...	.77
37-37.9	1.04	1.04	1.04	.97	.99	1.06	.90	.85	.89	1.25	1.22	1.17	1.27	1.22	1.04	...	...	.79
38-38.9	1.06	1.06	1.06	.99	1.01	1.08	.92	.87	.91	1.27	1.24	1.19	1.29	1.24	1.06	...	...	.81
39-39.9	1.08	1.08	1.08	1.01	1.03	1.10	.94	.89	.93	1.29	1.26	1.21	1.31	1.26	1.08	...	...	.83
40 and over	1.10	1.10	1.10	1.03	1.05	1.12	.96	.91	.95	1.31	1.28	1.23	1.33	1.28	1.10	...	...	.85

Column 1—Effective October 17, 1938, by Standard Oil Co. of Indiana. By Gulf Refining Co., October 13, 1938. Carter Oil Co. schedule and prices same from 30° upward, but on lower gravities pays below 21° 60 cents, with 3 cents added for each degree up to and including 29-29.9°, effective October 13, 1938. Gulf Oil Corp. starts at below 25° 78 cents, October 13, 1938. Texas Co. schedule starts at 28-28.9° at 86 cents. Pure Oil Co. same as Standard of Indiana's schedule, effective October 14, 1938.

Column 2—Sinclair Prairie Oil Marketing Co. February 16, 1939.

Column 3—Magnolia Petroleum Co. effective October 12, 1938; Shell Petroleum Corp., October 22, 1938; Shell Oil Co., Inc., April 1, 1939.

Column 4—Effective December 3, 1938, by Humble Oil & Refining Co. in Central Texas. By Magnolia Petroleum Co. in East Central and in North and Central Texas, excepting that it starts at below 29° at 79 cents, effective December 3, 1938. Texas Co. in North and Central Texas, same as Magnolia's but effective October 12, 1938. Gulf Refining Co. same as Magnolia's, effective October 13, 1938. Stanolind Oil Purchasing Co. in North Texas, schedule starts at below 21°, 63 cents, with a 2-cent spread upward to 40° and over at $1.03, effective September 1, 1940.

Column 5—Gulf Refining Co., October 13; Texas Co. October 12.

Column 6—Humble Oil & Refining Co., October 11, 1938.

Column 7—Humble Oil & Refining Co., effective December 3, 1938. Sinclair Prairie Oil Marketing Co., October 11, 1938. Texas Co. quotes "Panhandle sweet crude," beginning with 34-34.9°, at 84 cents, with 2-cent spread to 40° and over at 96 cents, and "Panhandle sour crude," 79 cents for 34-34.9°, with a top of 91 cents for 40° and over, effective October 12. Magnolia Petroleum Co. met Humble prices throughout, effective December 3. Gulf Refining Co. quotes "Panhandle sweet crude" at below 29°, 72 cents with a 2-cent spread, and a top price of 96 cents for 40° and above, and "Panhandle sour crude" below 29°, 67 cents, with a top of 91 cents for 40° and above effective October 13. Phillips Petroleum Co. schedule for sweet crude in Gray, Carson, and Hutchinson counties, starts at below 29°, 72 cents, with a spread of 2 cents up to 96 cents for 40° and over, effective February 7, 1939.

Column 8—Humble Oil & Refining Co., effective December 3, 1938. Sinclair Prairie Oil Marketing Co., October 11, 1938. Texas Co. quotes "Panhandle sweet crude" at 34-34.9°, 84 cents, with a top of 96 cents for 40 gravity, and "Panhandle sour crude" at 34-34.9°, 79 cents, with a top of 91 cents for 40° and over, effective October 12. Gulf Refining Co. quotes "Panhandle sweet crude" at below 29°, 72 cents, with a top of 96 cents for 40° and over and "Panhandle sour crude" at below 29°, 67 cents, with a top of 91 cents for 40° and above, effective October 13. Phillips Petroleum Co. schedule for sour crude in Carson, Moore, and Hutchinson counties, starts at below 29° at 67 cents, with a spread of 2 cents up to 91 cents for 40° and over, effective February 7, 1939.

Column 9—Humble Oil & Refining Co., effective October 11, 1938. Texas Co. schedule starts at below 26°, 65 cents, and ends at 36° and over at 87 cents, effective October 12. Gulf Refining Co. starts at below 26° at 65 cents and ends at 40° and over at 95 cents, effective October 13. Magnolia Petroleum Co. schedule starts below 25°, 63 cents, and ends at 40° and above at 95 cents, effective October 12. Sinclair Prairie Oil Marketing Co. schedule same as that of Magnolia, effective October 11, but revised on March 24, 1939, to stop at 36° and over at 87 cents. Stanolind Oil Purchasing Co. schedule same as that of Humble, effective October 11. Stanolind Oil & Gas Co. (Winkler County) starts at below 26°, 65 cents, with a 2-cent spread, and a top of 95 cents for 40° and above, effective October 11, 1938. Effective September 1, 1939, Shell Oil Co., Inc., posted Yoakum County crude, starting at below 20°, 53 cents, with 2 cents added for each degree up to 36° and over at 87 cents. Effective March 31 Atlantic Refining Co. added Gaines County to its price schedule.

Column 10—Humble Oil & Refining Co., effective October 11, 1938. Magnolia Petroleum Co., in Tomball, effective October 12.

Column 11—Effective October 2, 1939, by Humble Oil & Refining Co. in Texas Coast. By Sinclair Prairie Oil Marketing Co. in Texas Coast, October 3, 1939. By Texas Co. at $1.16 in Texas and Louisiana Coast, October 2, 1939, schedule stopping at 34° and over. By Sun Oil Co. in Texas and Louisiana Coast, October 2, 1939. By Gulf Refining Co. in Louisiana October 2, 1939, excepting that schedule stops at $1.16 for 34° and above. By Gulf Refining Co. in Texas, effective November 1, 1939.

Column 12—Effective by Humble Oil & Refining Co. October 2, 1939. By Sun Oil Co. in Anahuac, October 2, 1939. By Gulf Refining Co. in Anahuac, October 2, 1939. On November 1, 1939, Gulf Refining Co. applied these prices to Anahuac, Hull (New), Pierce Junction, Orange, Thompson (deep).

Column 13—Effective October 2, 1939, by Humble Oil & Refining Co. and Continental Oil Co. By Texas Co. up to 28° and over at $1.09 October 2, 1939. Atlantic adopted Humble price schedule November 7, 1939, in Refugio and applied it also to Greta.

Column 14—Effective October 2 by Humble Oil & Refining Co. By Sun Oil Co. in Mirando alone, stopping at 24-24.9° at 96 cents. By Stanolind Oil & Gas Co. in West Beaumont, alone, October 2, 1939. Gulf Refining Co. in West Beaumont, October 2, 1939. By Magnolia Petroleum Co. in Beaumont, October 2, 1939. By Texas Co. in Duval and Mirando, stopping at 28-28.9° at $1.09. Continental Oil Co. in Mirando and Duval, October 2, 1939. By Pure Oil Co. in Louise, Wharton County and Ganado, Jackson County, on October 23, 1940.

Column 15—Effective October 2, 1939, by Texas Co.

Column 16—Magnolia Petroleum Co., effective October 12, 1938.

Column 17—Continental Oil Co. for Minnie Bock, Clara Driscoll, S. Clara Driscoll and Driscoll ranch.

Column 18—Continental Oil Co., effective October 11, 1938.

Darst Creek and Bruner (Oct. 13, 1938)‡ $0.96
Luling (Oct. 12, 1938)† ..... .87
Mirando (Oct. 12, 1938)† ..... .
Government Wells (Oct. 13, 1938) ..... See note below

*Humble Oil & Refining Co. †Magnolia Petroleum Co. Pettus price adopted by Lytton Springs (Oct. 12, 1938)† ..... .90
Atlantic Crude Oil Purchasing Co. ‡Gulf Refining Co.

Government Wells posted by Sun Oil Co. starts at 20° at 77 cents, 3-cent spread to 24°-24.9° at 89 cents.

Middle Western States

OHIO OIL CO.

(Effective August 21 and 23, 1940)

Illinois old fields $1.00
Illinois basin 1.15
Illinois (Storms field) (Feb. 1, 1941) 1.10
Princeton, Ind. 1.00
Western Kentucky (Aug. 21, 1940)† 1.10
Birk City, Ky. (Jan. 1, 1941)¶ ..... .95
Corydon, Ky. (June 9, 1939) ..... .90
Greendale, Porter, Crystal, Vernon and Wise. Mich. (Jan. 2, 1941)*‡ 1.22
Buckeye, Bentley, Monitor (sweet crude), Edenville, Beaverton, Mich. (Jan. 2, 1941)* 1.20
Freeman-Redding and Lincoln (Jan. 2, 1941)*‡ 1.17
West Branch, Adams-Arenac, Mich. (Jan. 2, 1941)*‡ 1.02
Hamilton-Grout, Mich. (Jan. 2, 1941)* 1.07
Allegan-Kent and Ottawa, Mich. (Jan. 16, 1941) 1.23
Bloomingdale and Columbia, Mich. (Jan. 16, 1941)¶ 1.23
Muskegon 1.00
Sherman and Freeman, Mich. (Aug. 25, 1940)‡ 1.17
Midland, Mich. (Jan. 2, 1941)‡ 1.22
Eastern Kentucky:
Big Sandy River (Aug. 21, 1940)† 1.12
Kentucky River (Aug. 21, 1940)† 1.20

*Simrall Corp. †Ashland Refining Co. ‡Pure Transportation Co. ¶Sohio Corp. Bloomingdale posted by Tri-Lakes Corp. Kent County by Naph-Sol Refining Co. On May 25, 1940, Sohio posted $1 per barrel in the Griffin field in Gibson County, Indiana, and Wabash County, Illinois, and the North Griffin, South Griffin, Phillipstown, New Harmony and Irons in Wabash and White counties, Illinois. Allegan, Kent and Ottawa posted by Commonwealth Pipe Line Co.

Rocky Mountain States

Dry Creek, Wyo. (Oct. 11, 1938)* $0.92
Elk Basin, Wyo. (Oct. 11, 1938)*† ..... .90
Grass Creek, light, Wyo. (Oct. 11, 1938)*† ..... .90
Grass Creek, heavy (Oct. 11, 1938)† ..... .40
Lance Creek, Wyo. (Oct. 11, 1938)* ..... .77
Rock Creek, Wyo. (Oct. 11, 1938)* 1.00
Iles, light, Colo. (Oct. 11, 1938)† ..... .98
Iles, heavy, Colo. (Oct. 11, 1938)† ..... .92
Dutton Creek, Wyo. (Oct. 11, 1938)† ..... See note below
Frannie, light, Wyo. (Oct. 11, 1938)† $0.55
Frannie, heavy, Wyo. (Oct. 11, 1938)† ..... .42
Hamilton dome, Wyo. (Oct. 11, 1938)† ..... .35
Midway, Wyo. (Oct. 11, 1938)† ..... See note below
Salt Creek Tensleep Crude, Wyo. (Oct. 11, 1938)† $0.646
Salt Creek (Oct. 11, 1938) See note below
Canon City, Colo. (Oct. 11, 1938)‡ $0.90
Florence, Colo. (Oct. 11, 1938)‡ ..... .90
Cut Bank, Mont. (Jan. 1, 1940) 1.00
Kevin-Sunburst, Mont. (Jan. 1, 1940) .80
Cat Creek, Mont. (Oct. 11, 1938)‡ 1.10
Big Muddy, Wyo. (Oct. 11, 1938)‡ ..... .98
Lance Creek, Wyo. (Oct. 11, 1938)‡ ..... .77
Lea County, New Mexico ..... See West Texas gravity schedule‡
Artesia, Jackson and Maljamar ..... See gravity table‡
Fort Collins and Wellington, Colo. ..... See note below
Eddy County, New Mexico (Oct. 11, 1938)§ $0.77

*Ohio Oil Co. †Stanolind Oil & Gas Co. ‡Continental Oil Co. §Sinclair Prairie Oil Marketing Co.

Dutton Creek and Salt Creek Tensleep crudes start at below 29°, 86 cents, 2-cent spread up to 40° and over at $1.10. Salt Creek crude, excepting Tensleep, takes Standard Oil Co. of Indiana's Oklahoma-Kansas prices. Stanolind Oil & Gas Co., effective Oct. 11, discontinued posting prices in Greybull-Torchlight, Wyoming, and Hogback and Hospah, New Mexico. In Fort Collins and Wellington, Colorado, effective Oct. 11, 1938, by Continental Oil Co. 28-28.9°, 81 cents, with 2 cents added for each degree up to 40° and over at $1.05. Cut Bank and Kevin-Sunburst posted by Producers Refining Co.

Eastern States

SOUTH PENN OIL CO.

(Effective January 27, 1941)

Pennsylvania Grade oil in National Transit lines (Bradford field) $2.30
Pennsylvania Grade oil in Southwest Pennsylvania lines 1.95
Pennsylvania Grade oil in Eureka Pipe Line lines 1.89
Corning grade oil in Buckeye Pipe Line Co. line 1.12

TIDE WATER ASSOCIATED OIL CO. and NEW YORK TRANSIT CO.

(Effective January 27, 1941)

Bradford, Pa. $2.30
Allegany, N. Y. 2.30

PENNZOIL CO.

(Effective January 27, 1941)

Group A $2.23
Group B 2.22
Group C 2.21
Group D 2.20
Group E 2.18

QUAKER STATE OIL REFINING CORP.

(Effective January 27, 1941)

Southern Ohio (Pa. Grade):
In Buckeye Pipe Line lines $1.85
In Eureka Pipe Line lines 1.89

PURE OIL CO.

(Effective January 27, 1941)

West Virginia $1.89

Canada

ONTARIO

(Nov. 6, 1939, by Imperial Oil, Ltd.)

Petrolia $2.10
Oil Springs 2.07
Bothwell 2.10

TURNER VALLEY

(Sept. 12, 1940, by Imperial Oil, Ltd.)

Crude-oil price schedule starts at $1.08, for 33°-33.9°, including 2 cents for each degree gravity with top price for 64° and over 1.70
These prices f.o.b. producers' field tankage.

Crude-Oil Price Change

Sohio Corp., subsidiary of Standard Oil Co. of Ohio, advanced the price of Carmi and Storms City crude, White County, Illinois, 5 cents per barrel, effective February 1, 1941, making the new quotation there $1.10.

New York Markets

(Continued from Page 89)

viously remained unchanged since last summer. The improvement in the bright-stock prices has increased the refiners' realization on a barrel of crude oil nearly 15 cents in the past few weeks.

The East Coast motor-fuel market remains steady with prices tending higher for unbranded material. Apparently there are only limited quantities of 72-74-octane gasoline available at the market low of 5.5 cents in tank-car lots and at 5.25 cents in barges. More business is being transacted at the market high of 5.75 cents, revealing the improving trend in motor fuel.

The wax market, which has been on the decline for some time, continued its downward trend last week.

Gulf Coast Markets

(Continued from Page 89)

pect continues one of expected increased demand, and supplies on the coast are not great, but for some reason suppliers do not seem to be able to hold up prices. General weakness of fuels on the East Gulf Coast that has developed within the past 2 weeks is contributing to the uncertainty existing on the Gulf Coast.

Kerosenes were unsettled during the week with no definite trends. Material is readily available although there is some effort to raise quotations, which effort as yet is not effective.

Tank-Wagon Changes

(Continued from Page 90)

reduced tank-wagon prices of No. 2 and No. 3 fuel oil 0.2 cent per gallon in northern New Jersey with no change in the southern part of the state.

Standard of New Jersey advanced the dealer tank-wagon price of regular gasoline 1 cent per gallon January 28 at Charlotte, N. C.

Standard Oil Co. of Nebraska advanced dealer tank-wagon prices 0.5 cent per gallon at McCook, Norfolk, North Platte and Scottsbluff, Neb.

Standard Oil Co. (Indiana) advanced the dealer and consumer tank-wagon price of regular gasoline 0.5 cent per gallon February 3 at Grand Rapids, Mich.

Mississippi Fields

(Continued from Page 85)

Fayette County

B. L. Fillingame et al 1 T. Harbin, NW SW 3-16s-12w, 7-in. casing 1,542 ft., perf. 1,537-42 ft., packer at 1,515 ft., drilled to 1,546 ft., bailed dry, no shows, shut in 24 hr., water (possibly drilling water) raised 70 ft. in hole, showed good gas blow, testing.

Franklin County

E. O. Heath, Jr., 1 W. O. Hester, SW SW 4-8s-12w, S.D. 557 ft., plan to drill into Tuscumbia formation.

Limestone County

Shaw, Johnson & Thompson 1 Birmingham Trust, NW NE NW 15-2s-4w, set 6-in. casing 65 ft., drilling 260 ft.

Madison County

J. L. Caldwell et al 1 McCord, NW SE SE 30-1s-2e, S.D. 105 ft.
W. W. Newman 3 Nichols, NE NW NE 2-6s-2e, salt water, show oil 289 ft.

STANDARD OIL CO. OF CALIFORNIA

Crude-oil prices at the well effective February 1, 1940

(All gravities above those quoted take highest price offered in that field)

Gravity—	Signal Hill (Long Beach) (El Segundo)	Wilmington	Seal Beach	Huntington Beach	Inglewood	Playa Del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley-Canal	Cole's Levee Richfield Western	Mountain View	Elk Hills	Buena Vista, Midway-Sunset, Lakeview	Lost Hills	Coalinga	Kettleman Hills
14-14.9	$.65	$.60	$.64	$.63	$.64	$.65	$.61	...	$.65	$.61	$.61	$.62	$.63	...	...	...	...	$.60	$.60	$.60	$.60	
15-15.9	.65	.60	.64	.63	.64	.65	.61	...	.65	.61	.61	.62	.63	...	...	...	...	.60	.60	.60	.60	...
16-16.9	.65	.60	.64	.63	.64	.65	.61	...	.65	.61	.61	.62	.63	...	...	...	...	.60	.60	.60	.60	...
17-17.9	.65	.62	.64	.63	.68	.65	.61	...	.65	.61	.61	.62	.63	...	...	...	...	.60	.60	.60	.60	...
18-18.9	.65	.64	.64	.63	.71	.65	.65	...	.68	.61	.61	.62	.63	...	...	...	...	.60	.60	.60	.60	...
19-19.9	.69	.69	.64	.67	.75	.70	.69	...	.72	.61	.65	.62	.63	...	...	...	$.60	.64	.64	.64	.61	...
20-20.9	.73	.73	.64	.72	.79	.76	.74	...	.75	.65	.69	.62	.67	...	...	...	.60	.69	.69	.69	.62	...
21-21.9	.78	.78	.64	.76	.82	.81	.78	...	.79	.69	.73	.62	.72	$.63	...	...	.64	.74	.74	.74	.66	...
22-22.9	.82	.82	.69	.81	.86	.86	.82	...	.82	.73	.77	.66	.76	.63	...	...	.68	.79	.79	.78	.70	...
23-23.9	.86	.86	.75	.85	.89	.92	.86	$.71	.86	.78	.82	.71	.81	.67	...	...	.71	.84	.84	.82	.74	...
24-24.9	.90	.90	.80	.90	.93	.97	.90	.77	.89	.82	.86	.75	.85	.72	...	...	.75	.89	.89	.86	.78	...
25-25.9	.95	.95	.86	.94	.96	1.02	.95	.82	.93	.86	.90	.80	.89	.77	...	...	.79	.94	.94	.90	.82	...
26-26.9	.99	.99	.91	.99	1.00	1.08	.99	.88	.96	.90	.94	.84	.94	.82	...	...	.83	.99	.99	.95	...	...
27-27.9	1.03	1.03	.97	1.03	1.04	...	1.03	.94	1.00	.94	.98	.89	.98	.87	$.83	$.92	.87	1.04	1.04	.99	...	...
28-28.9	1.07	1.07	1.02	1.07	1.07	f.o.b.	1.07	.99	1.03	.98	...	.93	1.02	.91	.86	.96	.91	1.09	1.09	1.03	...	...
29-29.9	1.10	1.10	1.07	1.11	1.10	our	1.10	1.04	1.06	1.02	...	.98	1.06	.96	.90	.99	.95	1.14	1.14	1.07	...	...
30-30.9	1.14	1.14	1.12	1.15	1.14	pipe	1.14	1.09	1.09		...	1.02	1.10	1.01	.94	1.02	.99	1.19	1.19	1.11	...	...
31-31.9	...	...	...	...	1.17	line	1.17	1.14	...		...	1.07	1.14	1.05	.98	1.06	1.02	1.24	1.24	...	...	...
32-32.9	...	...	...	...	1.20		1.20	1.19	...		...	1.11	1.18	1.09	1.02	1.09	1.06	1.29	1.29	...	...	...
33-33.9	...	...	...	...	...	...	...	1.24	...	...	...	1.15	1.22	1.14	1.06	1.13	1.10	1.34	1.34	...	...	$1.12
34-34.9	...	...	...	...	...	...	...	1.29	...	...	...	1.20	1.28	1.19	1.10	1.16	1.14			...	...	1.17
35-35.9	...	...	...	...	...	...	...	1.34	...	...	...	1.24	...	1.23	1.14	1.20	...	...	...	...	...	1.21
36-36.9	...	...	...	...	...	...	...	1.39	...	...	...	1.28	...	1.27	1.18	1.23	...	...	...	...	...	1.25
37-37.9	...	...	...	...	...	...	...	1.44	...	...	...	1.33	...	1.31	1.22	1.26	...	...	...	...	...	1.29
38-38.9	...	...	...	...	...	...	...	1.49	...	...	...	1.37	...	1.36	1.25	1.30	...	...	...	...	...	1.33
39-39.9	...	...	...	...	...	...	...	1.54	...	...	...	1.42	...	...	1.29	1.34	...	...	...	...	...	1.38
40-40.9	...	...	...	...	...	...	...	1.59	...	...	...	1.46	...	...	1.33	1.37	...	...	...	...	...	...
41-41.9	...	...	...	...	...	...	...	...	...	...	...	1.50	...	...	1.37	1.40	...	...	...	...	...	...
42-42.9	...	...	...	...	...	...	...	...	...	...	...	1.54	...	...	1.41	1.44	...	...	...	...	...	...
43-43.9	...	...	...	...	...	...	...	...	...	...	...	1.59	...	...	1.45	1.47	...	...	...	...	...	...
44-44.9	...	...	...	...	...	...	...	...	...	...	...	1.63	...	...	1.49	1.51	...	...	...	...	...	...
45-45.9	...	...	...	...	...	...	...	...	...	...	...	1.67	...	...	1.53	1.54	...	...	...	...	...	...
46-46.9	...	...	...	...	...	...	...	...	...	...	...	1.71	...	...	1.57	1.57	...	...	...	...	...	...
47-47.9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.61		...	...	...	...	...	...
48-48.9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.64		...	...	...	...	...	...

For Newhall, McKittrick, Kern River, Round Mountain and Kern Front crude. Standard posts 60 cents per barrel for all grades. For Elwood Terrace crude (free on board ship), 33-33.9, $1.21, with 4 cents added for each degree up to and including 37° and over at $1.37; Wheeler Ridge crude, 19 to 21.9°, 60 cents; 22-22.9, 63 cents; 23-23.9, 67 cents; 24-24.9, 71 cents; 25° and over, 75 cents. On May 18, Union Oil Co. adopted Standard of California prices in all fields in which they both purchase.

MARKET RECORD OF ACTIVE OIL STOCKS . . .

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1940-41 High	1940-41 Low	Week ended Feb. 1 High	Week ended Feb. 1 Low	Week ended Feb. 1 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
58½	38½	50¼	47⅛	47⅛	Amerada Corp.	788,675	N.P.	50cQ	1-31-41	$2.00	$1.56	$2.07	74½	50	78	55
27⅛	18¼	23⅜	22⅜	22⅜	Atlantic Refining	2,663,999	$25	25cQ	3-15-41	1.00	1.66	1.40	24¾	18⅛	27⅜	17¾
16⅝	8½	9½	9	9	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.50	1.39	—.85	21	10¼	23¾	12⅛
13⅜	7⅛	9	8¼	8¼	Barnsdall Oil Co.	2,558,779	$5	15c	3-10-41	.60	.76	1.26	19½	11⅛	21⅜	10⅛
8⅛	5½	5⅛	5½	5½	Consolidated Oil Corp.	13,751,726	N.P.	12½cQ	2-15-41	.72½	.55	.55	9⅞	6½	10¾	7
25	16⅛	19⅝	17⅞	18	Continental Oil of Delaware	4,682,572	$5	25cQ	12-23-40	1.00	1.35	1.10	31½	19⅞	35¾	21¼
6⅞	3⅜	4⅛	3⅞	3⅞	Houston Oil	1,098,618	$25	....	10-17-30	....	.43	.83	9⅜	4½	9¾	5
14⅜	9	10⅝	10½	10½	Lion Oil Refining	435,815	N.P.	25cQ	12-31-40	1.00	1.50	2.09	18⅛	10	25⅛	15⅝
17⅜	11½	15	14	14	Mid-Continent Petroleum	1,857,912	$10	40c	12-2-40	.80	1.42	.56	18	11⅛	22⅝	12¼
11¾	7⅛	10¼	9¾	9¾	Mission Corporation	1,378,645	$10	25c	12-20-40	.25	.87	1.04	14⅞	8¾	17¾	10⅝
9¾	4⅝	6⅜	5⅝	5⅝	National Supply	1,155,517	$10	....	12-22-37	....	—.87	—.79	15½	5⅝	23	12½
8¾	5⅜	7⅝	7	7	Ohio Oil Co.	6,563,377	N.P.	25c	12-14-40	....	—.10	.25	10½	6	14⅞	8⅞
8⅞	5½	6⅝	6½	6½	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	....	.81	1.22	11⅞	7	15⅞	10¼
10½	6⅜	8	8	8	Pan American Pet. Trans.	4,702,945	$5	25c	12-21-40	.25	1.10	.08	8¾	5	9¼	6¼
41¾	27⅛	37⅜	36¼	36¾	Phillips Petroleum	4,449,052	N.P.	50cQ	3-1-41	2.00	2.21	2.03	46½	31¼	44⅜	27¼
22¾	15	16¼	15½	15½	Plymouth Oil Co.	1,038,633	$5	25c‡	12-23-40	‡1.30	2.38	2.59	24	17⅛	25⅝	15
11½	6¾	8	7½	7⅝	Pure Oil Co.	3,982,031	N.P.	25c	12-20-40	.25	1.11	.38	11¾	6⅛	13½	8¼
9¼	5⅞	9	8¼	8¼	Richfield Oil Corp.	4,010,000	N.P.	50c	12-21-40	.50	.65	.51	10¼	6⅝	9⅞	5
20	11	15¼	13½	13½	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	3-15-41	1.00	1.40	1.52	24⅜	15½	27½	15½
13⅛	7⅝	11⅜	10⅛	10⅜	Shell Union Oil	13,070,625	N.P.	50c	12-20-40	.75	.77	.72	17¼	9⅞	18⅜	10
23¼	12¼	21	19¼	20	Skelly Oil	995,349	$15	50c	12-20-40	1.25	1.99	2.27	29½	15½	34¾	18½
12½	7⅛	9⅛	8⅝	8¾	Socony-Vacuum	31,206,071	$15	25cSA	9-16-40	.50	1.10	1.29	15⅛	10¼	16⅜	10¾
26⅛	16¼	19⅝	18¾	18¾	Standard Oil of California	13,003,953	N.P.	25cQ	3-15-41	1.00	1.38	2.22	33⅝	24¼	34⅞	25⅛
29	20¾	27⅞	26⅞	26⅞	Standard Oil (Indiana)	15,272,020	$25	50c†	3-15-41	1.50	2.23	1.82	30	22¾	35½	24¾
46½	29⅞	35	33⅜	33½	Standard Oil of New Jersey	27,280,998	$25	75c†	12-16-40	1.75	3.26	2.86	53½	38	58⅜	39¾
41¾	26¼	38	36¼	36¼	Standard Oil of Ohio	753,740	$25	$1.25†	12-14-40	2.00	6.64	1.81	32¾	17	22¾	16¼
65⅞	46¾	57¾	54½	54⅞	Sun Oil	2,434,863	N.P.	25cQ§	3-15-41	*1.00	2.74	1.07	66	45¾	65⅛	45
2½	1⅛	1⅝	1½	1⅝	Superior Oil Corp.	1,388,979	$1	10c	12-28-40	.10	.04	.24	3⅝	1¾	4¼	1¾
47⅝	33	38½	37	37½	Texas Corp.	10,876,139	$25	50cQ	1-2-41	2.00	3.02	2.13	50¾	32½	49⅝	32⅝
4¼	2½	3⅛	3	3	Texas Gulf Producing Co.	888,147	N.P.	10c	12-14-40	.20	.69	.86	5¾	3¼	5⅞	2⅝
8⅝	5⅜	6	5⅝	5¾	Texas Pacific Coal & Oil	888,236	$10	10c	3-1-41	.40	1.00	1.16	11⅜	7	12½	7
12	8¾	9¾	9½	9½	Tide Water Associated	6,371,827	$10	15c	3-3-41	.70	1.05	1.28	14¼	9½	15⅜	10⅛
17½	12	13¾	13⅝	13⅞	Union Oil Co. of California	4,666,270	$25	25c	2-15-41	1.00	1.25	1.47	19¾	15⅛	22½	17⅛
29⅞	22¾	28½	27	27	Union Tank Car Co.	1,177,381	N.P.	45c	12-2-40	1.75	2.07	1.16	24¼	20⅛	23½	20
3⅝	1¾	1⅞	1¾	1¾	Wilcox Oil & Gas	470,768	$5	10c	2-15-40	....	.77	.52	4¼	2⅜	3½	1⅝

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 6 per cent in stock. —Deficit.

New York Curb Exchange

1940-41 High	1940-41 Low	Week ended Feb. 1 High	Week ended Feb. 1 Low	Week ended Feb. 1 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
10¾	4½	6½	5½	5⅝	American Republics Corp.	1,308,049	$10	25c	12-18-40	....	$0.14	—.22	11¾	5½	11¾	5
3¼	1⅜	1¾	1½	1½	Bridgeport Machine Co.	263,700	N.P.	$1.25	12-30-37	....	—.95	—.14	7¼	2½	10¼	4⅞
43	28	30¾	38	38	Buckeye Pipe Line Co.	200,000	$50	$1	12-14-40	$4.00	3.13	2.36	34¾	26½	39	22½
117	95	109	109	109	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	12-16-40	6.00	7.87	5.32	130	108⅝	128	97
6¾	4	4⅝	4⅜	4½	Cities Service (new)	3,703,978	$10	....	6-1-32	....	.68	.23	9¼	4¼	11	5⅛
2⅛	⅝	⅝	⅝	⅝	Cosden Petroleum	465,332	$1	....	.....	....	....	....	2¼	½	2⅜	⅞
24¼	11⅝	15¼	13½	13½	Creole Petroleum	6,974,356	$5	50cSA†	12-16-40	1.00	1.38	1.64	28	16¾	27½	17½
4⅜	5⅛	4	3⅞	3⅞	Darby Petroleum	351,390	$5	25cSA	1-15-39	....	.03	.69	7⅛	3⅝	10¼	5½
2	¾	..	..	..	Derby Oil & Refining	263,162	N.P.	....	.....	....	—.37	—.91	2⅝	1½	3½	1½
31	20¼	..	..	..	Eureka Pipe Line	50,000	$50	$3.50†	2-1-41	2.25	.63	—.37	23	15⅛	31	16
39⅞	25⅛	33	32¼	32¼	Gulf Oil Corp.	9,076,202	$25	25cQ	12-27-40	1.25	1.69	1.43	45⅛	29¼	46⅞	33
68	47⅛	58½	57¼	57½	Humble Oil & Refining	8,987,840	N.P.	62½c*	12-26-40	2.00	3.33	3.98	71	52½	72⅝	56
12⅜	5⅝	6⅝	6⅛	6⅛	Imperial Oil of Canada	26,965,078	N.P.	25c	12-2-40	.62½	.71	.96	17	11⅜	19½	14⅛
7¾	3	3⅞	3¾	3¾	Indiana Pipe Line	300,000	$7.50	20c	11-15-40	*2.80	.33	.47	7¼	5½	9⅜	6
10¾	8¼	10⅜	9⅝	9¾	International Petroleum	14,324,088	N.P.	30c	12-21-40	1.25	1.19	1.98	27½	17	31¼	21
2¾	1⅝	2⅜	2	2¼	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	....	.06	.14	3¾	2⅛	5	2⅛
10¾	7⅝	10⅛	9⅞	9⅞	Lone Star Gas	5,518,347	N.P.	30c	12-21-40	.70	.98	.88	10½	7⅛	10⅜	6⅝
6¼	3¾	4½	4¾	4¼	Louisiana Land & Exp.	2,966,762	$1	5c	12-16-40	.35	.22	.45	7¾	4	9⅜	6½
17	9¼	9½	9½	9½	Margay Oil Corp.	149,943	N.P.	25cQ	1-10-41	1.00	1.52	2.28	17	14½	24	16
8½	6½	7¾	7⅝	7⅝	Midwest Oil Co.	998,474	$10	45c	12-16-40	.90	.99	.93	8¾	6⅝	9¾	6⅝
6¼	4⅞	5⅝	5⅛	5⅛	Mountain Producers	1,593,584	$10	30cSA	12-16-40	.60	.70	.62	6	4⅞	5¾	4½
13⅛	10	12¼	12	12	National Fuel Gas	3,810,183	N.P.	25cQ	1-15-31	1.00	.95	.84	14	11¼	14⅝	11½
12¾	8¾	12⅛	11⅜	11⅜	National Transit	509,000	$12.50	50c	12-16-40	1.00	.91	.88	9½	7¼	9¼	6½
1¼	¾	..	..	..	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	1¾	1	2⅝	1½
7¾	5¼	7	7	7	New York Transit	100,000	$5	25c	9-20-40	.60	.88	.16	6	4	4½	3½
9⅞	6	9	8½	8½	Northern Pipe Line	120,000	$10	40c	12-2-40	.80	.31	.24	7	4½	6	4
5½	2½	3	2¾	2¾	Pantepec Oil	2,856,872	$1	....	.....	....	....	....	7⅝	4	7¾	3½
3¼	1	1⅛	1⅛	1⅛	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.70	.17	5	1¼	4½	1⅝
3	1½	2¼	2¼	2¼	Ryan Consolidated	298,931	N.P.	10c	12-28-40	....	.16	.29	3	1⅞	4	2⅛
11¾	4¾	8	8	8	Southern Pipe Line	100,000	$10	25c	9-3-40	.50	.25	—.27	4⅞	3½	5⅜	3¼
44	28	39	38	38	South Penn Oil	1,000,000	$25	$1.87½†	12-20-40	2.50	2.84	1.44	40½	26¾	39	28¾
35	21	..	..	..	Southwest Penna. Pipe Lines	35,000	$50	50c	12-26-40	6.50	2.06	—.41	23	18	22¼	16½
20⅛	16½	19⅞	19	19	Standard Oil of Kentucky	2,604,790	$10	55c†	12-16-40	1.30	1.53	1.45	20⅛	17¼	18¾	15
2	1⅝	1½	1⅝	1⅝	Sunray Oil	1,975,876	$1	5c	12-20-40	.10	.25	.23	2¾	1⅜	3¼	2
3⅛	2	2¾	2¾	2¾	Texon Oil & Land	936,024	$2	10c	12-30-40	.40	.49	.56	4	2⅝	5¼	3½
3⅜	2	2½	2¼	2¼	Transwestern Oil Co.	750,000	$10	....	.....	....	—1.42	.12	6	2½	5¼	2⅝
2⅛	¾	1⅛	¾	¾	United Gas Corp.	7,818,959	$1	....	.....	....	—.55	—.51	3⅜	1½	5¼	2⅝

*Includes $2.50 capital distribution. †Includes extras. —Deficit.

EQUIPMENT PROGRESS...

Oilwell Super Swivel Offers Several Advanced Features

The several advanced features of Oil Well Supply Co.'s line of rotary swivels are now available in a new swivel designed for the heaviest loads and highest

speeds of today and the even greater requirements of the future. The capacity of the "Oilwell" Super Swivel with 4½-in. 18-lb. drill pipe is given as 11,000 ft. at 400 r.p.m., 14,000 ft. at 200 r.p.m., and 17,000 ft. at 100 r.p.m. It provides a full 4-in. fluid passage through gooseneck, wash pipe, and body, resulting in streamlined flow with no change in fluid velocity. The gooseneck is heat-treated and galvanized and is of wide-radius design to minimize flow restriction and the cutting action of the fluid. The wall thickness is increased at the top. The body is provided with 7⅝-in. A.P.I. tool-joint threads (left hand). Extra length permits rethreading.

Like all other modern "Oilwell" swivels, the wash pipe of the new Super Swivel is faced inside and out with Di-Hard, having a uniform hardness well above 600 Brinell and a very low coefficient of friction. Di-Hard greatly extends the service life of the wash pipe and also its lubricated packing. The latter requires no adjustment, and waterproof grease is used for lubrication. Three fittings are provided so that at least one is accessible for lubrication no matter where the swivel body stops.

Two grease-lubricated oil seals contacting a hardened and ground sleeve at the bottom of the housing prevent oil leakage. Two similar lubricated seals close the oil bath at the top. All bearings are designed for capacities far exceeding the recommended maximum service load of the swivel. All are made by well-known manufacturers of antifriction bearings. All working parts operate in a 22-gal. circulating oil bath, which is ventilated by two large breathers equipped with filters.

Both the swivel housing and elevator links are protected from hammering and wear by a rubber-padded rest, which is integral with the swivel housing. Rubber-padded ears prevent the links from sliding off the rest.

TRADE LITERATURE

CATERPILLAR TRACTOR CO., Peoria, Ill.—34-page catalog devoted entirely to its new 80-hp. diesel D7 tractor. The booklet points out the new tractor's features by use of numerous illustrations. Cutaway pictures show cross-sections of the engine and the tractor chassis, while the accompanying text gives a complete description of all working parts. Separate sections of the book are devoted to the fuel system, general engine-construction features, the lubricating system, the transmission and final drive, the tracks and the track-roller assemblies, operator comfort, and available allied equipment. A complete tabulation of specifications is also included.

VAPOR RECOVERY SYSTEMS CO., 2820 North Alameda Street, Compton, Calif.—"Varec" Bulletin M-3, "Pressure and Vacuum Valves and Safety Devices for Tank Ships," illustrates and describes in detail the complete line of gas-control and safety equipment to handle petroleum products aboard tank ships and barges. It contains engineers' plan and elevation drawings of each product with dimensions, specifications, net and shipping weights, and prices. Illustrations of typical installations aboard tankers and barges and installation standard of "Varec" approved units are featured in detail.

BUCKEYE TRACTION DITCHER CO., Findlay, Ohio. —Bulletin 16-10, covering its Model 70, ¾-yd. Buckeye Clipper convertible shovel. Full specifications are given and the ease of convertibility to dragline, crane and trench hoe is illustrated. Copies are available on request.

Tong for Slim-Hole Drilling Offered by Web Wilson

A new tong has been introduced by Web Wilson Oil Tools especially adapted to slim-hole work. Essentially, it is a small reproduction of the regular Web Wilson rotary tong.

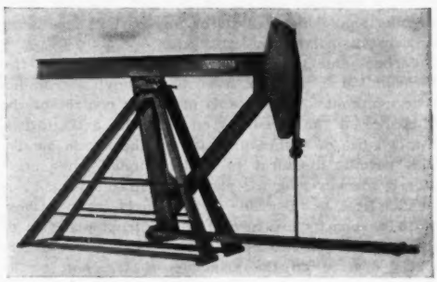
The distance from the center of a 4½-in. tool joint to the end of the lever is only 36 in., which is considered ample leverage for breaking out small tool joints. Special jaws may be supplied to adapt this tong to drilling with tubing or small casing. These jaws are said to be so designed that they do not crush or indent the pipe. The small size of the tong adds to speed and convenience and prevents such a torque as would bend or crimp the pipe.

An important feature of the tong is its size range with a small number of jaws. To change the tong from one range of tool-joint sizes to another, only one jaw, the outside or lug jaw, is removed and a similar one put in its place. Each of the replaceable jaws is marked with its size range so as to eliminate guesswork in choosing the proper jaw. With a series of four lug jaws the tong covers a range of from 2¾ to 8⅝ in.

National Supply Introduces New Line of Pumping Jacks

The National Supply Co. has announced the introduction of a new line of pumping jacks, designated as Type E, and built in three sizes with rated polished-rod load of 10,000, 12,000, and 16,000 lb. In order to insure a maximum in servicing convenience and a minimum power expenditure in operation, many new features have been incorporated.

The true-arc hanger provides an absolutely straight lift which contributes to longer wire-line wear and lower maintenance costs. A relatively low minimum ratio of 1 to 1 provides the short stroke so often desirable but longer-stroke requirements can also be met if necessary. Needle-type, oil-bath, antifriction bearings reduce power requirements and solve the problem of lubrication and excessive wear. They are self-aligning, dust-proof, and oiltight. Adjustment and self-alignment fea-



tures contribute extensively to the maintenance of operating economy and efficiency.

The rigid pyramidal-type frame is one of exceptional strength and stability, does not require the use of extra braces, and practically eliminates the possibility of deflection or misalignment under load. Steel castings, welded into the frame at the four areas of foundation contact, provide increased stiffness and a desirably wide foundation-bolt spacing at these vital points.

Type E jacks are fabricated from structural steel and steel castings by electric welding, a construction which results in an unusually strong and rigid unit. Further details and specifications may be had by asking for Bulletin 288, copy of which will be mailed upon request.

New Synthetic-Rubber and Koroseal Packings Announced by Goodrich

Two new types of packing, one made of Ameripol, its own synthetic rubber developed after 14 years of research and revealed last summer, and the other of Koroseal, the synthetic elastic material also created in its laboratories, are announced by B. F. Goodrich Co., Akron, Ohio. Both are sheet packing.

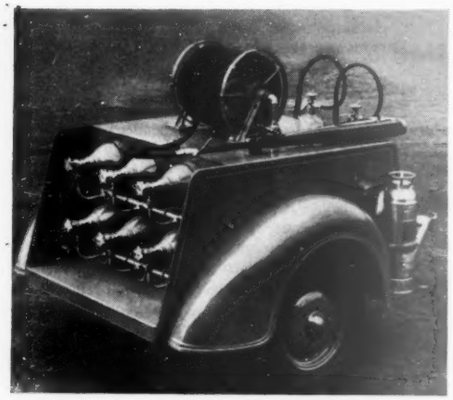
The Ameripol product is a dark sheet packing superior to natural rubber and other synthetic packings in its resistance to the action of oils. It ages well, and provides excellent resistance to heat and cold as well as water absorption. Tensile strength is approximately 1,500 lb. per sq. in., elongation 400 per cent, Shore durometer hardness 78 to 82. Made to order only in 100-lb. rolls, approximately 36 in. wide in thicknesses from 1/32 to ¼ in., inclusive, a square yard of the $\frac{1}{16}$-in. size weighs approximately 4¾ lb.

The Koroseal packing is specially compounded to resist the action of oils and solvents, and also resists the action of some corrosives. Tensile strength is about 2,200 lb. per sq. in., elongation 300 per cent, Shore durometer hardness 73 to 77. It is furnished in 26 by 26-in. sheets, with the 1/32, $\frac{1}{16}$, ⅛, and $\frac{3}{16}$-in. sheets carried in stock, and other thicknesses made to order.

Kidde Mobile Fire-Fighting Unit Has Many Uses

A compact and versatile fire-fighting weapon has recently been perfected by Walter Kidde & Co., Inc., Bloomfield, N. J., manufacturers of carbon dioxide fire-extinguishing equipment. It is designed to be hooked up as a trailer for emergency use.

This mobile unit carries a heavy armament against fire. The big artillery is a battery of six 50-lb. carbon-dioxide cylinders equipped with a hose reel and nozzle. The cylinders are manifolded together and are indi-



vidually operated by valves on each cylinder. This permits employment of all or any part of the unit's capacity on a large or small fire.

Carbon dioxide gas is discharged onto the fire through 100 ft. of ½-in. hose, fed through a trunnion type manifold. Allowance is made for control of the discharge at the "business end" of the extinguisher, through use of a shut-off valve on the nozzle handle. This permits discharge to be interrupted while operator is maneuvering for position against a blaze. For smaller fires, two portable carbon dioxide extinguishers of 15-lb. capacity are carried on the front platform of the trailer. Also two 2½-gal. pure-water extinguishers which operate on the principle of a siphon bottle. They contain a small cartridge of carbon dioxide which is released when the extinguisher is inverted, and which propels a water stream to an effective distance of 30 to 40 ft.

It is expected that the new trailer will be employed by industrial-plant fire brigades for use as "first aid" fire-extinguishing equipment. Delivery of several of these units has been made to a South American air force for emergency use at airports, where they are rushed to the scene of airplane crashes to guard against the fires which often result from such accidents.

Prefabricated Radiant Furnaces Developed by Petro-Chem

Furnaces of tubular design are used in the petroleum industry to heat fluids which are subject to varying degrees of thermal decomposition. Under these conditions the maximum heat transfer is usually determined by the allowable film temperature on the fluid side of the heating elements.

The Iso-Flow Radiant furnace, fabricated by the Petro-Chem Development Co., Inc., 120 East Forty-first Street, New York, has been developed to give a high overall thermal efficiency and at the same time have every square foot of heating surface absorb heat at the maximum permissible transfer rate. It has been possible to incorporate these principles in a simple mechanical design with an integral air heater so that the entire unit is essentially prefabricated, combining high thermal and operating efficiencies with a low capital investment.

The design consists essentially of an upright cylindrical combustion chamber surrounded by an annular air heater to form a simple mechanical structure. The heating elements are placed symmetrically around the burners so that all tubes are equidistant from the flame burst. By controlling the amount of radiant and convection heat to each section of every tube, practically uniform rates of heat transfer are obtained for every square foot of heating surface. These uniform rates are obtained by having the surface nearest the flame burst subjected to a controlled amount of radiant heat. The remainder of the surface is subjected to varying proportions of direct radiant, secondary radiant, and convection heat, with the maximum amount of convection heat at the low temperature section of the combustion chamber.

The heating elements are properly spaced around the entire cylindrical section of the setting, with the result that the temperature behind the tubes is sufficiently low to permit the substitution of nonoxidizing alloys for the conventional refractories in this zone.

With an air heater in place of the conventional convection section, the exit flue-gas temperature is low and is independent of the temperature of the entering charge. By having the air heater surround the combustion chamber, the radiation losses are substantially reduced and the overall thermal efficiency is higher than could be otherwise obtained. By utilizing the combined advantages of these basic principles, it has been possible to design furnaces up to 15,000,000 B.t.u. heat absorption per hour which are prefabricated and can be shipped as a single structure. For larger duties the furnace is prefabricated and shipped in segmental sections for simple field assembly.

Key Electric Steel Castings

A complete service for the production of electric steel castings, including designing, pattern making, annealing, and rough finishing, is now offered by the Key Co. of East St. Louis, Ill. This plant is also equipped with a modern machine shop for complete finishing of either special or production runs of castings, should the buyer's requirements demand full finishing operations.

The Key Co. has a reputation of many years for furnishing the oil-refining industry with special fittings for high-pressure and high-temperature service, where very exacting physical and metallurgical requirements must be met.

BJ Friction-Grip Elevator For Handling Surface Casing

Byron Jackson Co. is offering a friction-grip elevator for handling surface casing, or large-diameter water strings where the load is not too great. The design of the body and door is similar to that of the standard BJ side-door elevators. However, since the type of casing to be handled has no collars, it is necessary that the elevator have a powerful, evenly distributed friction grip. This has been accomplished by means of a machined inner bore (which may be wickered) and a special latch and take-up mechanism.

The latching device consists of a built-in pinion roller which meshes over an eccentric rack cast into the door. The tighter the latch is clamped the more firmly the elevator grips the casing because of the tightening effect of the eccentric rack. This gripping action is controlled by the take-up screw which pulls the latch inwardly toward the pipe. A cross-arm washer on the take-up screw fits into a saddle-like recess in the latch, so that the take-up screw can be unfastened only by unscrewing the take-up screw nut.

The BJ friction-grip elevator is made to order only as the inner bore must be machined to accommodate the type of surface casing to be handled. Specifications can be had by addressing Byron Jackson Co., Box 2017, Terminal Annex, Los Angeles, Calif.

NEW TWIN-CRANK PUMPING UNITS ADDED TO OIL-WELL LINE

Oil Well Supply Co. has rounded out its line of pumping units with two new twin-crank units intended for medium-duty service but featuring refinements of construction usually found only in units designed for the most severe pumping service. Designated as the "Oilwell" TC-12-H and TC-17 pumping units, both are identical except for the capacities and ratios of their reduction gears. The A.P.I. polished-rod load capacity is 12,800 lb. and available stroke lengths are 24, 32, 40, and 48 in. The D-12 double reduction gear of the TC-12-H unit has a 31.9 : 1 ratio and an A.P.I. peak torque capacity of 58,000 in.-lb. at 20 s.p.m. The D-17 reduction gear of the TC-17 unit has a 32.15 : 1 ratio and an A.P.I. peak torque capacity of 82,000 in.-lb. at 20 s.p.m.

Both reduction gears comprise heavily ribbed, rigid, cast semi-steel cases with single-helical, fully heat-treated, forged-steel gears and pinions. The shafts are also fully heat-treated, and are mounted in heavy-duty, shim-adjustable, tapered roller bearings. Pinions are integral with their shafts. The high-speed and low-speed shafts are equally extended and a quick-acting brake with convenient remote control operates on a drum at one end of the high-speed shaft. The gear ratios are readily adapted to drives from inexpensive high-speed prime movers as well as engines of the medium-speed range.

Frames, either short or extended, are of arc-welded structural steel with four-leg derrick-type samson posts. Both arc-type and rubber-cushioned, oilbath, link-type hangers are available. "Oilwell" Type B counterbalanced cranks are standard equipment. These cranks permit extremely accurate rotary counterbalancing, including the variations of lag or lead needed for most efficient pumping. The cranks clear the floor even when fully equipped with counterweight plates.

"Oilwell" TC-17 pumping unit

The saddle and upper-pitman bearings are oilbath and the crank-pin bearings are grease-pressure lubricated. All bearings are enclosed in weatherproof and oil-tight housings. The pitman equalizer arrangement is of an improved design which assures full equalization of all pitman loads. Changing stroke lengths is simplified by the use of self-aligning spherical roller bearings on the crank pins, combined with a universal bearing arrangement at the top of each pitman. It is only necessary to remove the crank-pin nut and withdraw the pin. No other dismantling is required, and the change may be made at one side at a time.

Leeds & Northrup Announces New Temperature Indicator

For those who need a portable instrument for thermocouple temperature measurements, for checking thermocouples, or for measuring small e.m.f.'s, addi-

tional precision can now be obtained without increase in instrument cost, by sacrificing the convenience of a reference-junction compensator. Increased accuracy has been provided in this 8667 indicator by calibrating only a small portion of the range on a continuously adjustable slidewire. The remainder, adjustable in fixed steps, is on a dial switch of 10 highly accurate resistors. Range is from 0 to 111 mv. with a limit of error of ± 0.1 mv.

Completely self-contained, this new potentiometer is light and compact. No additional accessories are required except the thermocouple and an ice bath for the reference-junction. Built into this potentiometer are coarse and fine battery rheostats, pointer galvanometer, standard cell, battery, galvanometer key and standardizing key. The oak case is 12¼ by 7¾ by 7⅞ in., with hinged lid and carrying handle.

For a detailed description, write Leeds & Northrup Co., 4934 Stenton Avenue, Philadelphia, Pa. Ask for the new Catalog E-33A-503, "Apparatus for Checking Thermocouple Pyrometers."

Caterpillar Announces Three New Models of Natural-Gas Engines

Three models of heavy-duty natural-gas engines have been announced by Caterpillar Tractor Co. of Peoria, Ill. The engines are built in two cylinder sizes. The Model 4600G is a six-cylinder unit and the 4400G is a four. Both of these engines have a bore of 4¾ in. and a 5½-in. stroke and they develop 74 and 48 hp., respectively, at 1,600 maximum governed r.p.m. A small four, the Model 3400G with a bore and stroke of 3¾ by 5 in., develops 34 hp. at 1,650 r.p.m.

The three valve-in-head engines are designed for heavy-duty work with a minimum of maintenance. Heat-resistant alloy valve-seat inserts are provided on all models. The engines have superfinished crankshafts with "Hi-Electro" hardened journals. Main bearing surface on the 4600G is 118 sq. in.; on the 4400G, 89.5 sq. in.; and on the 3400G, 80.3 sq. in.

The lubricating system provides efficient filtering and full pressure lubrication to all working engine parts. In addition there is an upper-cylinder lubricator to provide extra valve lubrication for use with dry natural-gas fuel. A combination gas-gasoline carburetor is standard equipment, and though the engine will satisfactorily burn gasoline for short periods such as for starting purposes when gas is not available, the fuel system is set for the most efficient combustion of natural gas. The system includes a filter to clean the gas with a regulator to handle gas pressures as high as 150 lb. at the supply. A complete manually operated manifold heat control is incorporated.

All three models of engines are available fan to flywheel, or as a complete power unit package with enclosed clutch and radiator.

Electric sets, incorporating each of the engines coupled to a self-regulating generator, have also been announced. The sizes of these self-contained sets are: Model 46-30, 30 kw.; Model 44-20, 20 kw.; Model 35-15, 15 kw.

The company also manufactures natural-gas conversion attachments for its six and eight-cylinder, 5¾-in. bore engines, rated at 140 and 190 hp., respectively. These attachments are characterized by simplicity. To change from diesel to natural gas, the pistons do not have to be touched, nor do any changes have to be made to interior parts of the engines. The entire change-over takes only about 4 hours, and can be done conveniently in the field.

New "Core Feed" Erasing Machine

Embodying an entirely new "core feed" principle which brings to electric erasing machines the convenience of an automatic pencil, a new electric eraser known as the Bruning hollow-shaft eraser has just been announced by the Charles Bruning Co., Inc., 100 Reade Street, New York. In order to overcome the frequent changing necessitated by short "stubby" eraser tips previously used on erasing machines, the new Bruning hollow-shaft eraser uses an eraser 7 in. long, fitting into a tubular armature shaft. This long, cylindrical rubber core can be fed out as it wears down and tightened at the lower end of the instrument by a chuck.

The motor unit of this erasing machine is especially designed for the machine, and has an impeller-type fan mounted on the shaft within the strong light-weight die-cast aluminum motor housing, insuring cool operation. An S.K.F. precision ball bearing at the chuck end assures long, trouble-free, quiet operation.

New Process for Applying Zinc Coatings to Steel Surfaces

Zinc coatings provide one of the most efficient and economical methods of protecting iron and steel against rust and atmospheric corrosion. For practical purposes, however, its use has been limited to work which could be treated in containers of various kinds at elevated temperatures or immersed in plating tanks.

It is now claimed that a new development known as the Rapid Zinc Plating Process No. 3 makes it possible to apply zinc coatings to large surfaces such as steel plates, shafting, tanks, and other equipment. Consisting, in the main, of only two functional operations this process can be used by unskilled labor in the field as well as in shops and fabricating plants. Any commercial thickness can be applied and heavier deposits made at points of greatest wear. Repairs to worn or damaged areas can also be made at any time with the same equipment. No cyanides or industrially hazardous chemicals are used.

With the exception of rust and scale removal, preparation of the surface prior to plating does not require the same care as is necessary with immersion methods.

For details write Rapid Electroplating Process, Inc., 1414 South Wabash Avenue, Chicago.

AMONG EQUIPMENT MEN...

Vapor Recovery Systems Opens Cleveland Office

The Vapor Recovery Systems Co. of Compton, Calif., manufacturers of "Varec" approved equipment, announces the opening of another branch engineering and sales office at Cleveland, Ohio, under the personal supervision of James Finley. This appointment is a part of the extension program undertaken by Frank V. Long, president of "Varec," to better serve the petroleum industry in that area.

JAMES FINLEY

Mr. Finley is a graduate mechanical engineer of Loyola University at Los Angeles, Calif., and, with years of experience, is fully qualified to handle all problems relative to vapor conservation, tank venting, and gas-control equipment. "Varec" offices are located at Suite 402, 1010 Euclid Avenue, in the center of Cleveland, Ohio. Other "Varec" factory offices include New York, Houston, Tex., and Tulsa.

BUSINESS NOTES

W. F. (Bill) Knode, a senior member of the firm of Foran, Knode, Boatright & Dixon, consulting petroleum engineers of Houston, Tex., and Calgary, Alta., Canada, has recently resigned to enter private consulting work, and has established headquarters in Corpus Christi, Tex. He was one of the founders of the firm and for the past 3 years has been located in Calgary, where he was instrumental in organizing the Alberta Conservation Board. Mr. Knode was graduated in mining engineering from the University of West Virginia in 1921. He was chief engineer of the Oil and Gas Division of the Texas Railroad Commission from 1931 to 1934. He has specialized in production-engineering problems in connection with the South Texas oil and gas fields since that area first entered the major development stage.

A. Carl Polk, Jr., for the past 6 years a superintendent of drilling and production in both West Texas and the Gulf Coast oil fields, is now in charge of the Texas sales territory for the Billings & Spencer Co. of Hartford, Conn., manufacturer of forged wrenches and tools for oil-field work. In addition to his practical oil-field experience Mr. Polk laid the foundation for his chosen endeavor by attending the petroleum-engineering school of the University of Oklahoma. Mr. Polk's headquarters are at 1925 Richmond, Houston, Tex.

According to M. E. Montrose, general sales manager, Lane-Wells Co. has opened branches at Olney, Ill., P.O. Box 348, and at Ardmore, Okla., 321 Simpson Building.

K. A. Campbell of the Douglas-Guardian Warehouse Corp. has recently been transferred to the Dallas, Tex., office, serving Texas, Oklahoma, and New Mexico. Mr. Campbell was formerly in the Los Angeles office serving the southern California territory.

Douglas Brown Leaves OCS Presidency

After 21 years continuous service with OCS Manufacturing Co., during which time he and his associates built the company into one of the best known in the oil industry, Douglas R. Brown has retired as president and general manager.

DOUGLAS R. BROWN

Mr. Brown is succeeded as president by Casper A. Ruf, president of Parkersburg Rig & Reel Co., and as general manager by Don C. Meyer, who has been vice president and treasurer of OCS. Mr. Brown will continue as a director of the OCS company, representing preferred stockholders of which he is one of the largest.

The OCS firm was established in 1919 by "Doug" Brown and several associates, including W. P. Turner, Long Beach, Calif.; the late D. D. Myers of Tulsa; W. R. Wilkerson, St. Louis, Mo.; and E. J. Exner, Coffeyville, Kans. The company had a humble beginning with a small shop at Coffeyville, Kans., but when Mr. Brown and his associates sold to Parkersburg Rig & Reel Co. in September 1939 OCS was an important factor in the oil-well supply and specialty manufacturing business, with plants at Coffeyville, Houston, Tex., and Long Beach, Calif. Mr. Brown remained with the company the past year during the period of transition.

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Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

EAST TEXAS Woodbine-Trinity sand wildcats starting. Leases afford 10 to 50 for 1 bet. Has already happened past 60 days. E. CROFT, PROCTOR, TEXAS.

NEW MEXICO
STATE OIL AND GAS LEASES
Another block in a NEW HOT SPOT. This is a good bet. Buy direct and save those dollars. No middle man to pay; no salesmen to bother you. Better buy a little of something, than a whole lot of nothing.
HARRY S. WRIGHT
New Mexico State Lessee
Farmington, New Mexico

FOR SALE Oil and gas leases and small production located in Kentucky shallow field, also tracts of proven Fluorspar and zinc deposits. Reports on request. W. P. HARLEY, Bowling Green, Kentucky.

LA SALLE COUNTY, TEXAS
Hot Wilcox play. Will give leases (3000 acres) for test. Good geology. Same contours, strike and trend as Cullen-Washburn well, that found five oil sands 3600-5400 feet. Box A-340, The Oil and Gas Journal, Tulsa, Okla.

WILL take $7500.00 cash for ⅛ interest in 3000 acres oil leases and drilling well, half completed, good geology, on West Texas Structure, six formations to 3250 ft. depth. Address Owner, 610 Wilson Building, Dallas, Texas.

FOR lease 9 patented gold claims near Boulder, Colorado. Electric power. Complete equipment for operations. Property in splendid shape. Ready for immediate operation. Address Box A-342, The Oil and Gas Journal, Room 1404, 105 W. Madison St., Chicago, Ill.

FOR SALE or Trade Producing oil and gas lease on 396 acres in Southern Illinois oil fields. Box A-341, Rm. 1404—105 W. Madison, Chicago, Illinois.

AUCTION, J. F. CRAIG Estate at Meehan Junction, Miss. (11 miles N.W. of Meridian), Feb. 12th, 10 A.M. 9434 acres valuable oil, gas, mineral and timber lands will be sold in 40 to 740 acre tracts regardless of price, for division among heirs. Terms cash.
JOHNSON LAND CO.
Haas-Howell Building
Atlanta, Georgia.

WANTED, name and address of practical driller owning his own drill, capable of drilling two to four thousand feet. Address T. L. Rice, Ames, Iowa.

LEASE FOR SALE. Cash and royalty terms. N½ of SE¼, Section 114, Block 4, I.&G.N.R.R. Survey, Carson County, Texas. Proven territory, adjacent Phillips operations. James McBee, 320 East 10th St., Kansas City, Mo.

FOR SALE
800 acres of land in the oil belt of Western Kentucky. One-half (1/16) of minerals reserved to owner. Good geology. Three shallow producing oil wells. No deep drilling. $10.00 an acre. Joel Bailey, 309 Grein Bldg., Evansville, Ind.

Leases and Drilling Blocks

HOMER L. FITCH, GEOPHYSICIST AND LOCATION ENGINEER
WHY drill dry holes? Our method only locates structures which contain oil or gas. Drawer 711, Brownsville, Texas.

WANTED—Good men to finance drilling campaign proven leases famous high gravity shallow belt. No advances. Box 448, Cisco, Texas.

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Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

Geophysical Service

THE Gravitational Selector, 14957 Lakewood Heights Boulevard, Lakewood, Ohio, offers to help make this your Lucky Year in producing Oil and Gas. Why not stop guessing? Use this scientific method to locate your structures and wells. Our last three predeterminations are making 120, 200 and 500 barrels respectively in a state where dry holes are the rule. Use our system and you will start the year right and end it a more prosperous man.

Business Opportunities

FOR SALE—Idaho Phosphate Property. Unusual investment opportunity in the world's largest phosphate field. Clear title to incorporated company and all its holdings. Write H. C. Petersen, Rt. 5, Omaha, Nebr.

Royalties

ANDREW J. BARRETT
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B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

WILL buy small or large producing oil royalty interests in Okla., Texas or New Mexico. Oscar L. Grimes, Tulsa Loan Bldg., Tulsa, Okla.

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522 Fifth Ave., New York, N. Y.

WILL purchase royalties, on land in Illinois. Must first be given right to test land with my method, which quickly eliminates non-mineral formation. This test is done without charge and free from any obligation on part of owner of land. Not interested in brokers offers. Address Box A-268, The Oil and Gas Journal, Room 1404, 105 W. Madison, Chicago, Illinois.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Situations Wanted

CHEM. Eng. 10 yrs. experience in oil devel. refining, and operation. Wish to make change. Address Box A-330, The Oil and Gas Journal, Tulsa, Okla.

ACCOUNTANT, office manager, experienced in oil industry. Capable of handling income taxes, social security and wage and hour matters. Box A-332, The Oil and Gas Journal, Tulsa, Oklahoma.

SUCCESSFUL MANUFACTURERS' AGENT calling on Texas refiners and industrial plants wants additional high quality line which requires experienced engineer who has demonstrated sales ability. Box A-345, The Oil and Gas Journal, Tulsa, Okla.

LEASEMAN. Experienced in leasing large blocks Georgia, Florida, and Alabama. Have car, can furnish best of references. Address Kenneth Nix, 343 Peachtree Street, Atlanta, Georgia.

ACCOUNTANT-Office Manager, experienced in oil industry, capable of taking full charge, desires permanent connection with firm offering opportunity for advancement. Box A-350, The Oil and Gas Journal, Tulsa, Okla.

TECHNOLOGIST - CHEMIST — 8 years refinery experience—now employed, desires change. Box A-352, The Oil and Gas Journal, Tulsa, Okla.

Help Wanted

WELDING Engineer, graduate metallurgist with experience in fabrication procedure and welding practice. State acceptable salary. Battelle Memorial Institute, Columbus, Ohio.

WANTED — Experienced refinery designing draftsman. Permanent. Salary. Box A-343, The Oil and Gas Journal, Tulsa, Okla.

AMERICAN Citizens, wanted three draftsmen, not now engaged in National Defense work, familiar with power plant design and modern piping. Give complete experience record and sample of work. Address: Siems Drake, Puget Sound, Seattle, Washington.

WANTED
SALESMEN
Geophysical Experience Desirable.
GEOLOGICAL SCIENTIFIC SERVICE CO., INC.
Sinclair Building
FORT WORTH, TEXAS

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Ranches—Farm Lands

FOR SALE: Beautiful Historical California Ranch, 800 A. Semi modern, improved. Live Oaks, springs, etc. Good roads; 26 miles east San Diego. Snap $36.000. 2644 Rimpau Blvd., Los Angeles.

WYOMING CATTLE RANCH 10,000 A. deeded, 15,000 A. leased. Will handle 3000 cows. Cuts 3500 tons hay. Excellent fishing, hunting and scenery. Spacious modern house. Huge barns and sheds. Will sell completely equipped at less than half value with or without 2000 high grade Herefords. Western Realty Company, 400 Livestock Exchange Building, Denver, Colorado.

For Sale—Maps

NEW Oil & Ownership Map—Smith Co. Texas, including Hawkins Field. Complete map—$15.00—cloth $20.00. Eby Engineering Company, Box 717, Tyler, Texas.

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